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ABSTRACT

The Higher Education Amendments of 1998 required a study of the feasibility of alternative financial instruments for determining lender yields in the Federal Family Education Loan Program (FFELP) and called for an evaluation of the 91-day Treasury bill, 30-day and 90-day commercial paper, and the 90-day London Interbank Offered Rate (LIBOR) as possible reference rates for lender yields. The legislation created a study group, which met five times to discuss issues outlined in the statute. This report contains an analysis of the six statutory requirements for financial instruments for determining lender yields, but does not attempt to reach a conclusion because study group members could not reach agreement. The report describes the different positions of study group members. The Ticket to Work and Work Incentives Improvement Act of 1999 (Public Law 106-170) subsequently amended the Higher Education Act to replace the T-bill with commercial paper as the reference rate for lender yields for new FFELP loans made between January 1, 2000 and June 30, 2003. This report should be useful as Congress considers whether to continue that policy. (SLD)

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ED 449 746

Final Report Regarding the Findings of the Study Group On the Feasibility of Using Alternative Financial Instruments For Determining Lender Yield Under the Federal Family Education Loan Program

January 19, 2001

Submitted by the General Accounting Office and the Department of Education

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United States General Accounting Office
Washington, DC 20548

January 18, 2001

The Honorable James M. Jeffords
Chairman
The Honorable Edward M. Kennedy
Ranking Minority Member
Committee on Health, Education, Labor, and Pensions
United States Senate

The Honorable John A. Boehner
Chairman
The Honorable George Miller
Senior Democratic Member
Committee on Education and the Workforce
House of Representatives

As required by Section 802 of the Higher Education Act Amendments of 1998,[1] we and representatives of the Secretary of Education conducted a study of the feasibility of alternative financial instruments for determining lender yields on student loans in consultation with a group of industry participates and other agency representatives. This report reflects the results of that collaborative effort.

As a general background for the report's analysis of issues raised in the mandate, Chapter 1 provides an overview of federal student loan programs and their participants. The mandate directed us to evaluate alternative financial instruments in terms of six groups of issues. First, we were to consider the historical liquidity of the market for the 91-day Treasury bill, 30-day and 90-day commercial paper rate, and the 90-day LIBOR and, second, the historical spread between rates for each. Chapters 2 and 3 contain our analyses of these issues. Third, we were to consider recent changes in the liquidity of the market for each financial instrument in a balanced federal budget and low interest rate environments, and projections of future liquidity assuming the federal budget remains in balance. We analyze these issues in chapter 4.

Chapter 5 presents our analyses of the remaining three issues enumerated in the mandate. These include the cost or savings to lenders of all sizes and to the federal government of basing lender yield on either the 30-day or 90-day commercial paper rate or LIBOR while continuing to base the borrower rate on the 91-day Treasury bill. The effects of a change in the reference rate and markup on lenders would vary somewhat depending on the business strategies for originating, holding, and selling or

[1] P. L. No. 105-244, Sec. 802 (1998).

securitizing student loans. We discuss the effects for each. With regard to the consequences of any change on the federal government, the Study Group was unable to reach consensus on the correct measure of cost to the government. Two measures of cost are discussed in the report: budget-based and economic- or risk-based costs. All Study Group members agreed that any change in the reference rate and markup must be budget neutral. However, no consensus was reached on the appropriateness of considering or measuring risk-based costs for the government due to any change in the index formula. Finally in chapter 5, we address the question of any possible risks or benefits to the student loan programs and to student borrowers.

We are sending copies of this report to interested parties and making it available upon request. If you or your staff have any questions regarding this report, please contact me at (202) 512-8678.

Sincerely yours,

Thomas J. McCool
Managing Director
Financial Markets and Community Investment

UNITED STATES DEPARTMENT OF EDUCATION

OFFICE OF THE DEPUTY SECRETARY

January 19, 2001

Honorable James M. Jeffords
Committee on Health, Education, Labor, and Pensions
United States Senate
Washington, DC 20510

Dear Mr. Chairman:

The Higher Education Amendments of 1998 (P. L. 105-244) required a study of the feasibility of alternative financial instruments for determining lender yields in the Federal Family Education Loan Program (FFELP) and called for an evaluation of the 91-day Treasury bill, 30-day and 90-day commercial paper, and the 90-day London Interbank Offered Rate (LIBOR) as possible reference rates for lender yields. The legislation created a study group, co-chaired by the Comptroller General and the Secretary of Education and directed GAO and Education to prepare a report on its findings.

The study group met five times to discuss the issues outlined in the statute. In addition, numerous communications among the study group members occurred during and after the period in which the study group held its meetings. GAO and Education worked with the other study group members and endeavored to reach a consensus but did not achieve a consensus on the study group's findings. Thus, the report contains an analysis of the six statutory criteria but does not attempt to reach a conclusion.

As you know, The Ticket to Work and Work Incentives Improvement Act of 1999 (P. L. 106-170) subsequently amended the Higher Education Act to replace the T-bill with commercial paper (CP) as the reference rate for lender yields for new FFELP loans made between January 1, 2000 and June 30, 2003. The experience of the past year has demonstrated that the formula chosen by Congress to replace the T-bill formula is not cost neutral as intended, but actually increased taxpayer costs by $3.7 million. The study group's report and the experience of the past year should be helpful to Congress as it considers these issues.

Sincerely,

Frank S. Holleman III

UNITED STATES DEPARTMENT OF EDUCATION

OFFICE OF THE DEPUTY SECRETARY

January 19, 2001

Honorable Edward M. Kennedy
Ranking Minority Member
Committee on Health, Education, Labor, and Pensions
United States Senate
Washington, DC 20510

Dear Senator Kennedy:

The Higher Education Amendments of 1998 (P. L. 105-244) required a study of the feasibility of alternative financial instruments for determining lender yields in the Federal Family Education Loan Program (FFELP) and called for an evaluation of the 91-day Treasury bill, 30-day and 90-day commercial paper, and the 90-day London Interbank Offered Rate (LIBOR) as possible reference rates for lender yields. The legislation created a study group, co-chaired by the Comptroller General and the Secretary of Education and directed GAO and Education to prepare a report on its findings.

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Frank S. Holleman III

UNITED STATES DEPARTMENT OF EDUCATION

OFFICE OF THE DEPUTY SECRETARY

January 19, 2001

Honorable John A. Boehner
Chairman
Committee on Education and the Workforce
House of Representatives
Washington, DC 20515

Dear Mr. Chairman:

The Higher Education Amendments of 1998 (P. L. 105-244) required a study of the feasibility of alternative financial instruments for determining lender yields in the Federal Family Education Loan Program (FFELP) and called for an evaluation of the 91-day Treasury bill, 30-day and 90-day commercial paper, and the 90-day London Interbank Offered Rate (LIBOR) as possible reference rates for lender yields. The legislation created a study group, co-chaired by the Comptroller General and the Secretary of Education and directed GAO and Education to prepare a report on its findings.

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Sincerely,

Frank S. Holleman III

UNITED STATES DEPARTMENT OF EDUCATION

OFFICE OF THE DEPUTY SECRETARY

January 19, 2001

Honorable George Miller
Ranking Member
Committee on Education and the Workforce
House of Representatives
Washington, DC 20515

Dear Congressman Miller:

The Higher Education Amendments of 1998 (P. L. 105-244) required a study of the feasibility of alternative financial instruments for determining lender yields in the Federal Family Education Loan Program (FFELP) and called for an evaluation of the 91-day Treasury bill, 30-day and 90-day commercial paper, and the 90-day London Interbank Offered Rate (LIBOR) as possible reference rates for lender yields. The legislation created a study group, co-chaired by the Comptroller General and the Secretary of Education and directed GAO and Education to prepare a report on its findings.

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Sincerely,

Frank S. Holleman III

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CHAPTER 1: AN OVERVIEW OF MAJOR FEDERAL STUDENT LOAN PROGRAMS AND PARTICIPANTS

INTRODUCTION

As mandated by section 802 of the 1998 reauthorization of the Higher Education Act, as amended (HEA), this report presents the results of the Study Group on the feasibility of using alternative financial instruments for determining lender yields under the Federal Family Education Loan Program (FFELP). As required, members of the Study Group were convened by the Comptroller General and the Secretary of Education. In accordance with section 802, the other members were the Secretary of the Treasury, the Director of the Office of Management and Budget, the Director of the Congressional Budget Office, representatives of entities making FFELP loans, other entities in the financial services community, other participants in the student loan programs, and other individuals designated by the Comptroller General and the Secretary of Education. The mandate is included in appendix I, and appendix II is a complete list of the non-government members and government agency members of the Study Group.

Section 802 of the HEA requires the Comptroller General and the Secretary of Education to submit a final report regarding the findings of the Study Group. The report begins with general descriptive material about FFELP and, in order to put FFELP in context, the William D. Ford Federal Direct Loan Program (DL). The report addresses the six specific issues raised in the legislative mandate (enumerated in the next section). Where members of the Study Group disagree with any of these portions of the report, that disagreement is noted, and/or their separate views are included as appendices.

Although section 802 did not require the Study Group to make a recommendation about the use of an alternative financial instrument, the Study Group did attempt to do so. Unfortunately, it was not successful. Instead, the report includes different positions presented by Study Group members. They include: the full text of the Study Group's FFELP lenders' proposal regarding an alternative financial instrument for determining lender yields (appendix XI); the Administration's position (appendix XII), FFELP lenders' comments on the report (appendix XIV), Treasury Undersecretary Gensler's remarks on debt management at the February 2000 mid-quarter refunding announcement (appendix XV), and a proposed set of principles from the non-FFELP lender and non-government members of the Study Group to be used when considering changes in the financial instrument to be used to determine lender yields (appendix XIII).

FFELP provides a credit guarantee and a set of subsidies to lenders in order to encourage a diversity of lender participation in the guaranteed loan program, so that all postsecondary school students have access to moderate interest rate loans. Federal student loan policy has dictated uniform terms and conditions on student loans. This results in the federal government paying subsidies (in-school

interest, special allowances, and/or guarantee payments) on all loans when some loans may be profitable without payments and others may not be.

Section 802 mandates that the Study Group analyze 91-day Treasury bills, commercial paper (CP), and the London Interbank Offer Rate (LIBOR) as potential bases for setting the index of lender yields.[1] Treasury bill rates, a credit risk free rate in the short-term sector of financial markets, have been a benchmark in money markets for a long time. Since the 1980s, with the growing breadth, sophistication, and internationalization of money markets, some private rates, LIBOR and CP, have become increasingly important. Both have been proposed as alternatives to the Treasury bill rate for the determination of lender yields on FFELP loans because they are considered better able to reflect money market conditions and lenders' cost of funds.

When section 802 was enacted, both the student rate and lender yield were indexed to the 91-day Treasury bill for most Stafford loans, the primary component of FFELP loans. However, at the end of 1999, legislation was enacted for Stafford loans to change the index on which the lender yields are based to commercial paper rates for most of the loans.[2] This legislation did not change the index for student borrower rates. The change to commercial paper will affect new Stafford FFELP loans made between January 1, 2000, and June 30, 2003. For loans made after July 1, 2003, the index for both students and lenders will change to a Treasury rate of comparable maturity to student loans plus 1%. The formulae for determining borrower rates and lenders' yields will be discussed in more detail in subsequent chapters because the components of the formulae are significant contributors to lenders' risks in the current program. Lender yields in this report are gross of any discounts or fees absorbed by lenders or guarantee agencies.

Purpose of the Study

In response to the Section 802 mandate, this report evaluates the 91-day Treasury bill, 30-day and 90-day commercial paper, and the 90-day LIBOR in terms of:

- The historical liquidity of the market for each, and a historical comparison of the spread between: (1) the 30-day and 90-day commercial paper rate, and the 91-day Treasury bill rate; and (2) the spread between the LIBOR and the 91-day Treasury bill rate;
- The historical volatility of the rates and projections of future volatility;
- Recent changes in the liquidity of the market for each such instrument in a balanced Federal budget environment and a low-interest rate environment, and projections of future liquidity assuming the federal budget remains in balance;

[1] Commercial paper is short term unsecured lending by firms with strong credit ratings. LIBOR measures the rate for loans among internationally active banks.
[2] In 1999, approximately 87 percent of all federal student loans were Stafford loans.

- The cost or savings to lenders with small, medium, and large student loan portfolios of basing lender yield on either the 30-day or 90-day commercial paper rate or the LIBOR while continuing to base the borrower rate on the 91-day Treasury bill, and the effect of such change on the diversity of lenders participating in the program.
- The cost or savings to the federal government of basing lender yield on either the 30-day or 90-day commercial paper rate or LIBOR while continuing to base the borrower rate on the 91-day Treasury bill; and finally
- Any possible risks or benefits to the student loan programs under the Higher Education Act of 1965 and to student borrowers.

This report also discusses topics that provide important context for the issues raised in the legislative mandate. These include

- The major Federal student loan programs;
- The current economic and financial characteristics of the lender industry;
- How alternative instruments can affect lenders' risks and returns, as well as the risks faced by different size lenders when rates and spreads are volatile and markets are illiquid; and
- How using alternative financial instruments could affect the costs or savings and risk for the federal budget and other federal concerns; and could affect various non-lender participants in the programs.

The analyses in this report reflect discussions at the meetings of the Study Group, interviews with Study Group members and other industry participants, discussions with Study Group participants after the last meeting of the Study Group, and reviews of drafts by Study Group participants. Analyses by Education, Treasury, and GAO, subsequent to the last meeting, were included in the drafts reviewed by Study Group members.

To address this mandate, this report analyzes the implications for lenders and other parties of prospective loans under alternative formulae and focuses on Stafford loans, the bulk of student loans.

OVERVIEW OF MAJOR FEDERAL STUDENT LOAN PROGRAMS

This chapter provides a broad overview of FFELP and DL, the two major federal student loan programs--including a description of borrowers served, the types of loans available, and the participants in the programs. It also generally discusses the goals, constraints, and possible operating strategies of FFELP lenders.

TWO MAJOR FEDERAL STUDENT LOAN PROGRAMS

FFELP and DL loans for students pursuing postsecondary education include subsidized Stafford loans, unsubsidized Stafford loans, PLUS loans, and consolidation loans. All FFELP and DL loans receive federal support at least to the extent of (1) a subsidized guarantee or direct federal credit exposure[3], (2) a wedge between the FFELP lender yields and borrower rates, and (3) subsidized caps on borrower rates. At the end of federal fiscal year 1999, the total amount of outstanding federally guaranteed loans, including direct loans, was about $170 billion. (See table 1.1.) Most loans are Stafford loans to student. PLUS loans represent loans to guardians or parents for the benefit of the student and consolidated loans represent new loans used to replace existing loans and do not increase outstanding student loan balances. (See table 1.1 and 1.2.)

[3] Lenders pay the U.S. government an origination fee of 50 basis points (a basis point is one-hundredth of a percent) for each loan. The lender assesses a 3% fee on the borrower, which is paid to the federal government. However, the assessment can be discounted to the student, and the student may not pay the full 3%, even though the fee still is paid to the government. The guarantee agency assesses a 1% fee on the borrower, which is deposited in the federal reserve funds to pay for defaults. Although the reserve funds are federal property, the Higher Education Act allows guarantee agencies to discount the fee, which most do. Recently, the Department of Education reduced fees for Direct Lending in response to the reductions in FFEL fees charged by lenders and guarantee agencies.

TABLE 1.1: OUTSTANDING LOAN BALANCES END OF FISCAL YEAR 1999 ($ MILLIONS)						
LOAN TYPE	**FFEL PROGRAM**		**DL PROGRAM**		**TOTAL**	
	DOLLARS	**% of Loan Type**	**DOLLARS**	**% of Loan Type**	**DOLLARS**	**% of Total Loans**
Stafford[1]						
Subsidized	$65,443	77%	$19,699	23%	85,142	49%
Unsubsidized	28,565	72	11,216	28	39,781	23
PLUS[2]	12,706	82	2,848	18	15,554	9
Consolidated[3]	20,008	62	12,067	38	32,075	19
TOTAL	126,727	73	45,830	27	172,552	100

Notes:

1. The Federal government pays the interest on subsidized Stafford loans while the student is in school or otherwise not in repayment, while interest accrues to the loan balance on unsubsidized Stafford loans.
2. PLUS loans are loans made to parents and guardians for the benefit of their dependent students. This figure also includes SLS loans, which provide supplemental loans to students until the unsubsidized Stafford loan program was created in 1994.
3. Consolidated loans replace one or more existing loans and do not contribute to the increase in outstanding balances.

Percentages may not sum due to rounding.
Source: Department of Education

TABLE 1.2: LOAN ORIGINATIONS IN FISCAL YEAR 1999 ($ MILLIONS)						
LOAN TYPE	**FFEL PROGRAM**		**DL PROGRAM**		**TOTAL**	
	DOLLARS	**% of Loan Type**	**DOLLARS**	**% of Loan Type**	**DOLLARS**	**% of Total Loans**
Stafford						
Subsidized	$10,427	66%	$5,318	34%	$15,745	37%
Unsubsidized	7,721	69	3,437	31	11,208	26
PLUS	1,908	61	1,198	39	3,106	7
Consolidated	4,720	37	8,006	63	12,726	30
TOTAL	24,826	58	17,959	42	42,785	100

Note: Percentages may not sum due to rounding.
Source: Department of Education

Student and Parent Eligibility

FFELP and DL loans are virtually a federal entitlement. Every student pursuing a postsecondary education on at least a half-time basis at a school meeting certain gatekeeping requirements may obtain funds directly and/or through his/her parents. For the students and families served by these loans, the programs finance a large proportion of the cost of both undergraduate and graduate postsecondary education. The loans can be used at state four-year colleges and universities, 2-year community colleges, private colleges and universities, and for-profit trade and technical schools (commonly referred to as proprietary schools).

The Structure of the Lender Yield Formula in Stafford Loans

Although Congress has changed the maximum borrower rate and lender yield under FFELP numerous times since 1965, this report will focus on comparing T-bill, LIBOR and commercial-paper based formulae as required by section 802.[4] By concentrating on the interest rate index for Stafford loans, the dominant class of loans outstanding, we can illustrate the implications of alternative indices for setting rates for lenders. In addition, by concentrating on prospective loans, this analysis illustrates the implications of alternative yield formulae based on 91-day Treasury bill rates, commercial paper, or LIBOR interest rates. Historic rate changes for Stafford and other loans are reported in appendix III.

For the rest of this report, the following terminology is used in describing interest rates and lender yields.

- *Reference rate* -- an interest rate on a cash market instrument used, or referred to, in a formula for calculating another rate.
- *Markup* -- an amount determined by law to be added to a reference rate (such as a Treasury bill rate) to determine a new derived rate.
- *Student borrower rate* -- a reference rate plus a markup.
- *Lender's yield* or interest income -- a reference rate plus a markup.
- *Margin* -- a market-based add-on to a market rate; a margin can be negative, and it changes based on market conditions and the creditworthiness of the borrower.
- *Lender's interest expense* -- a market reference rate plus a margin.
- *Market rate* -- the interest rate for commonly traded cash market financial instruments such as Treasury bills, CP, or LIBOR.
- L*ender's spread* -- the difference between a lender yield and its funding cost (interest income minus interest expense).

---

[4] Before the change to a commercial paper based formula, the lenders yield on student loans had been linked to Treasury issues.

- *Special Allowance Payment (SAP)* -- a payment that the federal government makes to FFELP lenders that equals the difference between the rate a student pays (which is capped) and what the current formula provides for lender yields (which is not capped).

In this report, we assume the T-bill formula for lender yield put in place in 1998 in the legislation that mandated this study. (See in table 1.3.) For Stafford loans made on or after July 1, 1998 through December 31, 1999, the student rate is the sum of the 91-day Treasury bill reference rate and a markup. For loans originated in this period, the student markup is 1.7% while the student is in school, grace or deferment[5] and 2.3% while the student borrower is in repayment. The student borrower rate is adjusted annually and fixed for the whole year. The maximum student borrower rate is 8.25%. The lender yield is the 91-day Treasury bill reference rate plus a lender markup. The 91-day Treasury reference rate for lenders is set quarterly based on the weekly auctions of Treasury bills during the quarter. The lender markup is 2.2% while the student is in school, grace or deferment and 2.8% when the student borrower is in repayment.

The formula for the lender yield includes a SAP which is intended to maintain a yield or spread for the lender. The SAP permits students to pay lower rates while encouraging lender participation in FFELP. The SAP incorporated an explicit general subsidy of 0.5 percent for all Stafford loans. The SAP is the lender rate minus the rate paid by students as long as the difference is positive. If the difference is negative, the lender receives the student rate and no SAP. If the quarterly lender yield declines, so does the SAP generally. The minimum or "floor" yield to lenders is the student rate for the year. As described previously, the government assumes the responsibility for borrowers' interest payments on "subsidized" Stafford loans before the loans enter repayment and while repayment is deferred.

[5] Under a Stafford loan student have a 6-month grace period after ceasing enrollment at least half time to start repaying the loan. In addition a student while in school or deferment need not make payments on loans.

Table 1.3: Maximum Student Borrower Rates and Lender Yields on Stafford Loans Originated From July 1,1998, To December 31, 1999

	Reference Rate	Markup	Reset Period	Maximum Rate or Cap for Student borrower	Minimum Yield or Floor For Lender
Rates and Yields While The Student Borrower Is In School, Grace, or Deferment					
Student Borrower Rate	91-day T-Bill	1.70 %	Yearly	8.25%	Student borrowers are not subject to the lender minimum yield
Lender Yield	91-day T-Bill	2.20%	Quarterly	Lenders are not subject to the student rate cap	Student borrower rate, which is reset annually
Rates and Yields While The Student Borrower Is In Repayment					
Student Borrower Rate	91-day T-Bill	2.30%	Yearly	8.25%	Student borrowers are not subject to the lender minimum yield
Lender Yield	91-day T-Bill	2.80 %	Quarterly	Lenders are not subject to the student rate cap	Student borrower rate which is reset annually

NOTE: If the lender yield exceeds the students' rate, the government pays the difference, i.e., the SAP.
Source: Analysis

Since the special allowance for the last three quarters of the year is based upon the difference between the annual borrower rate and quarterly rates, any drop in rates during those quarters reduces the general subsidy, and to that extent it is symmetrical. The SAP is asymmetrical, however, to the extent that lender yield, set quarterly, fall more than 0.5 percent below the borrowers' rate set in July, i.e., the reference rate falls more than 0.5 percentage points. In such situations, the lender would receive the student rate. The SAP is also asymmetric when the lenders' formula rate exceeds the cap on the student rate.

FFELP lenders may offer lower interest rates to borrowers either when the loan is originated or after periods of on-time payments. Prior to 1998, lenders generally charged FFELP borrowers the maximum interest rate. Occasionally, lenders offer some reduction in the interest rate after a period of on-time payments. More recently, however, lenders have expanded the availability of interest reductions for on-time payment and a few now offer unconditional interest rate reductions.

BUDGET SCORING FOR STUDENT LOAN PROGRAMS

The cost of FFELP to the government, for budgetary purposes, is determined following the terms of the Federal Credit Reform Act of 1990. The act requires that the federal budget reflect the net present value of the total cost to the government of loan programs in the budget year in which the loan commitments are made. This means that the amount that is estimated to be the government "subsidy" over the life of the loan is recorded as part of the federal budget in the initial year of the loan. The act therefore requires agencies to estimate the cost of extending or guaranteeing credit, called the subsidy cost. This cost is the present value[6] of cash disbursements by the government, minus estimated payments to the government both calculated over the life of the loan. For loan guarantees, the subsidy cost is the present value of cash flows from estimated payments by the government (for defaults and delinquencies, interest rate, the SAPs, and other payments) minus estimated payments to the government (for loan origination and other fees, penalties, and recoveries). The Credit Reform Act specifically excluded administrative costs from the subsidy calculation. Changes in the terms of FFELP loans require new estimations of subsidy costs. For example, when the SAP terms are adjusted, the flow of payments over the life of the loan changes as well, so the subsidy cost of the program is different. (See appendix IV for an extended discussion of the Congressional Budget Office (CBO) methodology for estimating budget effects.)

[6] Present value is the value today of a stream of payments in the future, discounted at a certain interest rate. Generally, when calculating the present value of loan subsidy costs, agencies must use a discount rate that is the average annual interest rate for marketable U.S. Treasury securities with similar maturities to the guarantee, as specified in the Credit Reform Act.

The presence of the borrowers' interest rate cap and the floor on lenders' yield poses particular problems for the budget scoring of student loans. For example, under the standard scoring procedures, there is no cost reflected in the budget for the interest rate cap when the interest rate forecast is low. However, it is possible that at some point over the life of the loan, the interest rate cap will be exceeded. The CBO uses a methodology called "probabilistic scoring" to capture the likely budgetary costs associated with the caps and floors. CBO looks at historic volatility of interest rates and estimates the likelihood associated with rates exceeding caps, or falling fast enough to activate the floor, over the life of the loans. CBO translates this likelihood into an estimated outlay for its estimates of the student loan baseline and proposals affecting the student loan program.[7]

PARTICIPANTS IN THE STUDENT LOAN PROGRAM

This section describes the various types of entities involved in the student loan programs in addition to borrowers: schools, the Department of Education, lenders, loan servicers, guaranty agencies, investors, investment banks, and credit-rating agencies. This discussion of program participants provides the context needed to understand the discussion of possible changes in the financial instrument used to determine the reference rate for lender yield.[8]

SCHOOLS

Schools initially determine whether to participate in FFELP, DL, or both.[9] Once the school decides which program it will participlate in, it makes the certification necessary for a borrower to obtain a loan. Schools in the FFELP program often provide borrowers a preferred or recommenced list of lenders based on the services, loan terms (such as rate discounts for on-time performance), and key service factors offered by the lenders.[10] However, borrowers in FFELP program schools are legally free to choose among all eligible FFELP lenders.

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[7] OMB did not object when CBO, in the fall of 1999, used probabilistic scoring to determine the budget costs of switching the reference rate to commercial paper.

[8] Emerging Web products may affect the relationships among program participants.

[9] After incurring debt in an available program, individual borrowers may, however, change programs by taking out a consolidation loan in the other program.

[10] Service competition by lenders involving "inducements," such as unsolicited mailing of loan applications or paying schools for referrals of loan applications, is illegal.

The Higher Education Act provides the broad structure of program requirements, then authorizes the Secretary of Education ("the Secretary") to administer the program. Among the responsibilities of the Secretary is the promulgation of regulations to provide detail on how the requirements will be implemented. Sometimes, the statutory requirement is very specific, in which case the regulation will simply restate the statutory language (e.g., loan limits). In other cases, the statute expresses the requirement in only the broadest terms, and gives extensive authority to the Secretary to define standards of compliance (e.g., collection due diligence).

The Department is responsible for

- determining a student's eligibility to receive federal student financial assistance;
- gatekeeping, monitoring, and enforcement activities for postsecondary schools;
- recognizing accrediting agencies and administering the Quality Assurance and Experimental Sites program, the Default Reduction Initiative, and Closed School activities;
- monitoring the participation of guarantors, lenders, secondary markets, and third-party servicers in the Federal Family Education Loan Program;
- collecting and resolving defaulted Federal Family Education Loans, Perkins Loans, and Federal Direct Student Loans;
- maintaining a centralized database on individuals that apply for and receive federal student financial assistance,
- managing the financial aspects of the Student Financial Aid Programs, such as receipt, disbursement, accounting, and financial reporting for program funds;
- developing and disseminating information about the federal student loan programs;
- developing cost estimates for the student loan programs; and
- providing technical support and information for financial aid administrators.

LENDERS

General eligibility to originate and hold loans under FFELP is limited by the HEA primarily to: (1) banks and certain other savings institutions; (2) pension funds; (3) insurance companies; (4) one state or private, nonprofit agency for each state; and (5) with certain limitations, schools. Although other financial institutions and investors are not eligible for direct participation as lenders in FFELP, the HEA authorizes the use of trustee banks as eligible lenders to hold loans for the benefit of others without regard to the latter's own eligibility. Sallie Mae[11] is eligible to hold loans originated by eligible originators. Secondary

[11] In 1972, Congress chartered Sallie Mae as a shareholder-owned government-sponsored enterprise (GSE) with a purpose of providing liquidity for the student loan market. The GSE provides this liquidity through the direct purchase of insured student loans from eligible lenders

markets[12] use trustee banks to originate loans, if they are not directly eligible to do so themselves.

An eligible lender can approve and originate loans.[13] Once the loan is originated, the lender can:

(1) keep the loan on its books and earn either a positive or negative return and interest spread based on the lender yield and its own interest and other expenses;
(2) sell the loan to a purchasing lender and record the gain or loss on the sale; or
(3) securitize the loan by selling the loan to a trust that has beneficial ownership of the loans and funds its holdings by selling debt to investors, and book a gain or loss depending on the terms of the transaction.

Some loan holders, who are not eligible lenders, purchase loans from originators and some eligible lenders both originate and purchase loans. These include:

- the Student Loan Marketing Association (Sallie Mae), a state-chartered holding company that owns both a federally chartered government-sponsored enterprise, which is being liquidated, and a state-chartered subsidiary;
- state agencies and private, not-for-profit entities; and
- for-profit lenders, such as banks.

In 1998 Sallie Mae was the largest holder of FFELP student loans and banks dominated originations of FFELP loans. (See tables 1.4 and 1.5.)[14] Both holdings and originations were concentrated in larger institutions as shown in tables 1.6 and 1.7. The top 10 institutions held 59 percent of outstanding loan balances and the top 10 institutions originated 48 percent of the loan volume in 1998. However, ongoing market developments are leading to changes in the concentration of both originations and outstanding balances.

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and through warehousing advances, which are loans to lenders secured by insured student loans. The Student Loan Organization Act of 1997 authorized the restructuring of Sallie Mae as a fully private state-chartered corporation.

[12] Secondary markets are financial institutions that are specifically chartered to purchase student loans from lenders and provide liquidity to the student loan market.

[13] The Higher Education Act prohibits discrimination by all eligible lenders based on the standard non-economic factors (such as race, religion etc.). There is no general affirmative mandatory service requirement by any lender, and lenders are expressively authorized to consider the financial situation of student borrowers in determining whether to make loans. Certain forms of economic discrimination are generally prohibited in consolidation loans. In making PLUS loans, lenders are required to determine that a borrower or an endorser does not have an adverse credit history.

[14] Due to the data collection cycles in student lending, the most recent data available to determine concentrations are from 1998.

Table 1.4:
Total FFELP Program Loan Balances
By Type of Lender in 1998

Type of Lender	$ billions	% of total
Sallie Mae	$ 38.4	31.6%
Secondary Markets	29.4	24.2
Banks	51.7	42.5
Other	2.2	2.2
Total	121.7	100.0

Source: U.S. Department of Education

Table 1.5:
Total FFELP Program Originations
By Type of Lender in 1998

Type of Lender	$ billions	% of total
Banks	$18.0	80.4%
Secondary Markets	2.7	12.1
Other	1.7	7.5
Total	22.4	100.0

Source: U.S. Department of Education

Table 1.6:
Concentration of FFELP Program Outstanding Loan Balances Held By Type of Lender in 1998

	$ Billion	% of Total
Top 10	$72.1	59.2%
Top 25	93.6	76.9
Top 50	107.3	88.2
Top 75	113.1	92.9
Top 100	115.6	95.0
Total Lenders	121.7	100

Source: U.S. Department of Education

Table 1.7:
Concentration of Originations in FFELP Loans in 1998

	$ billions	% of total
Top 10	$10.8	48.2%
Top 25	15.0	67.0
Top 50	17.6	78.6
Top 75	18.9	84.4
Top 100	19.7	87.9
Total Lenders	22.4	100.0

Source: U.S. Department of Education

Under the HEA, each state can designate a not-for-profit secondary market to help ensure that every student at every eligible institution can receive a loan, and provide liquidity to originators.

Loan Servicers

Loan servicers undertake the processing necessary to ensure that cash flows of the loans are recorded and transferred to and from lenders, guaranty agencies, and the Department of Education. Holders of student loans can service their own loans or contract out for loan servicing. Sallie Mae, Citibank, Secondary Market Services, and some of the other largest student loan lenders[15] tend to do their own servicing. Other lenders often arrange for some or all of the FFELP loan origination and/or maintenance functions to be performed by a third-party servicer.[16] If servicing does not conform to detailed procedures promulgated by the U.S. Department of Education, the lender may not be reimbursed should the borrower default.

Guaranty Agencies

Guaranty agencies confirm eligibility, guarantee loans, monitor status of loans, provide delinquency counseling/default aversion and provide claims adjustments. FFELP loans are guaranteed as to 98 percent of principal and accrued interest (100 percent in the case of death, disability, bankruptcy discharge, closed schools and loans-of-last-resort) by 1 of 36 state and private, nonprofit agencies designated on a state or national basis by the Secretary of Education.[17] The federal government reinsures up to 95 percent of the guaranty agencies' risk[18] and pays them for loan-processing/issuance, account-maintenance and default-aversion fees, and collection retentions. In addition, the federal government

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[15] Some large holders of student loans provide loan servicing to other holders that may or may not be selling loans to such holders. Under such arrangements, the secondary market may perform some or all of the marketing, origination, funding, and/or servicing functions for the originating lender of record while the student is in school. The loan may also be sold to the secondary market when or before the loan enters repayment pursuant to a forward-purchase agreement, often at a predetermined price.

[16] Third-party servicers are not subject to eligibility limitations by organizational type; however they must meet federal requirements of administrative capability and financial responsibility, and they are subject to audit by the Department of Education. Eligible lenders remain responsible for the performance of their legal duties despite any delegation of functions to third-party servicers and must monitor the latters' activities.

[17] Loans under both programs must be unsecured. FFELP lenders are neither prohibited from obtaining endorsements of their loans by creditworthy individuals nor required to obtain such private guarantees. There is no approved form for lenders to secure endorsements on Stafford loans, and they do not normally do so. Endorsements are used to overcome adverse credit histories for the eligible borrowers in PLUS loans.

[18] Reinsurance is reduced as low as 75 percent for high levels of default on loans guaranteed by the particular guaranty agency.

permits them to hold reserve fund accounts, which belong to the federal government. The federal reserve accounts include any borrower-paid guaranty fees, to cover their guaranty obligations and operational expenses. The government also directly guarantees or reinsures FFELP lenders against the inability of guaranty agencies to fulfill their guarantees because of insolvency.

Federal reinsurance is the ultimate support for the value of a loan if the borrower defaults, but it is available only if the guaranty agency correctly enforces federal regulations and attempts to collect from delinquent borrowers. If the loan servicing and collections are not done in accordance with federal regulations, the federal guarantee can be voided and create losses for the guaranty agency and the lender. As long as all parties in the process are in compliance with the regulations, the guarantee substantially eliminates losses due to default.

Guaranty agencies are authorized to collect a single insurance premium from FFELP borrowers of not more than 1 percent of the principal amount of their loans to cover the portion of their guaranty risk that is not federally reinsured. Prior to reauthorization of the HEA in 1998, some guaranty agencies had generally or selectively reduced or eliminated this insurance premium. Since reauthorization, the elimination of guarantee fees has become widespread due to market pressures. In addition, federal law states that the reserves of the guaranty agencies are federal monies. Thus, any reserves might be claimed by the federal government at some future time.[19]

Figure 1.1 depicts the cash flows in a FFELP program loan, from the student borrower and to and from the loan servicer, lender, guarantee agency, and the Department of Education.

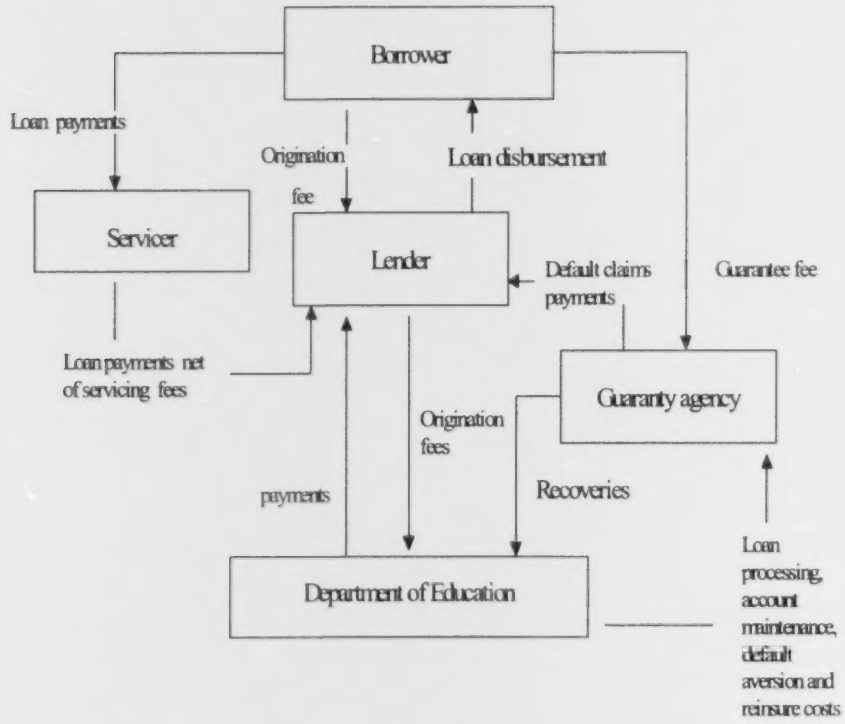
Investors, Investment Banks, and Credit Rating Agencies

Investors are a crucial source of funding for student lending, because most of the funds supporting student lending by FFELP lenders are raised in the capital markets. Lenders issue debt or equity capital or create ABS to fund student loans, which are sold to investors in capital markets. Credit rating agencies and investment banks are crucial links between investors and student lending. Investment banks advise lenders on the best funding mechanisms and actually market or sell the equity, debt, or ABS to investors. Credit rating agencies evaluate this debt or ABS in terms of credit risk. The resulting credit ratings affect the interest that must be paid to investors. As part of the evaluation, credit

[19] Because the reserves belong to the federal government, interviews with industry participants indicate that guaranty agencies have responded by lowering or not charging the fee to gain competitive advantage. This behavior depletes the reserves, while offering lower premiums to attract or maintain current business. In addition, industry participants told us that at least some guaranty agencies will be forced to re-institute the fees or be unable to fulfill their guarantees once the reserves have been depleted.

agencies evaluate the risks posed by servicers, guarantee agencies, and regulatory changes.

Figure 1.1: Cash Flows From a FFEL Program Loan



Investors and credit rating agencies consider the following factors:

- the quality, term and status of the financed loan portfolio and underlying loans;
- the current market funding costs;
- the extent of equity funding;
- the guarantees and other credit support for the issuance;
- the management capabilities of the issuer; and

- the quality and cost of the servicing support for the loans.

Such criteria affect the financial instruments issued by both not-for-profit and for-profit student lenders.

FOR-PROFIT AND NOT-FOR PROFIT LENDERS FACE SIMILAR RISKS THAT CONSTRAIN THEIR OPERATIONS

For-profit lenders and not-for profit lenders have different goals and constraints. Not-for-profit lenders involved in student lending are created to serve the social good but many for-profit lenders, see student lending as one of many lines of business. For-profit-lenders, therefore, must evaluate whether and how to provide student loans. Both for-profit and not-for-profit lenders must satisfy their customers, employees, other members of the community, and investors in their debt. In addition, for-profit lenders must also provide returns for their stockholders.

Almost all funding for student lenders comes from the capital markets. If the funding is debt based, the lender must ensure that the interest and principal owed to investors are paid on a timely basis. If investors who provide funds to student lenders perceive a risk that might endanger interest and principal payments, they may require a higher interest rate or even refuse to lend funds to student lenders. For-profit student loan lenders also obtain funding from equity stockholders. Stockholders, like debt holders, consider the risk and return from investing but generally expect higher returns because they face higher risks. Stockholders' risks and returns are higher because stockholders' returns are based on expected profits, which are a residual after all other obligations including interest and principal are paid. If a student lender does exceptionally well, a large profit is expected. If the student lender does poorly, there may be little or no profit for the stockholder. If the student lender fails, the stockholders may not even receive their initial equity investment because other claimants against the failed student lender must be satisfied before the stockholders.

Our review of annual reports and offerings to sell debt and our interviews with for-profit institutions confirm a trade-off between risk and return. In practice, however, for-profit firms measure returns and risks in different ways or use several measures simultaneously. Returns are often discussed in terms of operating profits or gains on sale. Risks are often discussed in terms of volatility of the returns or the probability of losses of different magnitudes.

Investors and investment banks view risks similarly. In discussing risks, they often mention

- interest rate risk or basis risk,
- prepayment risk,

- credit risk and servicing risk,
- political or regulatory risk, and
- management risk.

INTEREST RATE RISK

Interest rate risk is the risk that changes in interest rate levels, and the spreads among different interest rates will increase the volatility of returns, reduce returns, or even create losses. Interest rate risk is seen in the volatility of FFELP lenders' returns and is an important issue for lenders because interest expense is their largest expense. Their interest spread, a primary determinant of the returns and risks, is the difference between interest income, based on the formula yield and interest expenses, which usually vary with movements in commercial rates such as LIBOR or CP. Even if the lender's return is based on the sale of loans, interest risk is important because higher levels of interest rate risk decrease the value of the loan and the gain on sale that can be earned.

Basis risk is a form of interest rate risk in which the interest income and interest expenses are based on different instruments. When a FFELP lender's yield is based on the T-bill rate while its interest expense is tied to LIBOR or commercial paper rates, basis risk is an important concern. If the yield and interest expenses are both tied to the same interest rate, basis risk is essentially eliminated.[20]

PREPAYMENT RISK

Prepayment risks exist when the rate of prepayment is quicker or slower than the expected prepayment rate. A student loan is a long term loan and can last up to 30 years after the student has entered repayment. Lenders must make decisions about the amount and timing of debt used to support the student loans. In making these decisions, lenders determine the advantages and risks of alternative maturity patterns in the debt. The decisions take into account the expected amount and maturity of the student loan assets. However, lenders do not know when students will enter repayment since they can defer repayment while pursuing further education. The lender also does not know if the borrower will default. In addition, a student may have several loans with one or more lenders and can decide to combine such loans into one consolidation loan, which can have a longer term to maturity than the original loans. Consequently, unexpected movements in the amounts or maturity of outstanding student loans held by lenders can create financial risks for the lenders.

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[20] A residual amount of basis risk may remain if the noninterest terms on a lender's funding differ from the noninterest terms on student loans. An example would be timing difference in the contracts.

Prepayment risk exists because (1) the returns on reinvestment of prepaid loans fluctuate as interest rates fluctuate and (2) the opportunity to recover the cost of originations (including any up-front fees paid to the Department) or premiums paid to acquire the loans must be amortized over a shorter period than originally expected. Financial analyses for lenders assume a rate of prepayment by students when determining funding needs. Unexpected early or late prepayments affect lenders adversely since their funding amount and the timing of their own funding are based on the expected prepayment rates on student loan assets.

Credit Risk and Servicing Risk

Credit risk is the risk of loss from borrower delinquencies (late payments) or defaults. Delinquencies lead to late interest income and lead to collection costs. This lost income and collection costs can create a need for added funding. Credit risk for lenders is almost completely ameliorated by guaranty agencies and the federal reinsurance guarantee. However, some credit risk remains even if the guarantee remains in place. For example, when a loan is sold or when loans are consolidated, credit risk exists until the payments are correctly redirected to the new loan holder.

Servicing risk, that is, mistakes and errors, which may occur when servicing the loan, can create credit risks for the lender, because improper servicing can void the federal guarantee on student loans. The servicing requirements are highly regulated with specific due diligence requirements detailed in regulation.

Political or Regulatory Risk

Political or regulatory risk exists for the lenders, as they do in any government program. The lenders' yields and eligibility requirements are set by federal statute and enforced by the Department of Education, while interest costs are determined in the market. Numerous statutory changes have occurred in the interest rate subsidies and regulations dealing with guarantee fees and payments in the event of a student borrower default. As shown in appendix III, lender yields have been changed four times since 1992. The creation of the DL program in 1993 added another element of political risk. With DL in place, the FFELP industry is regulated by its direct competitor, which lenders told us poses additional risk to the FFELP lenders. Going forward, the FFELP industry will continue to face political risk. According to lenders, a change to a reference rate based on a long-term Treasury rate with a 1% markup in July 2003 as required under the current law, would worsen their trade-off between risks and return and discourage future participation. Switching to a long-term reference rate with a 1% markup as specified in the law "need not imply an immediate crisis in the market

for guaranteed student loan but it could be problematic for lenders in the longer term." according to a Treasury study in 1998.[21]

Management Risk

Management risk is the risk that management will be unable to manage the lender appropriately or make management errors. Mismanagement by the lender can lead to bankruptcy and missed payments to investors. Furthermore, mismanagement of a not-for-profit guaranty agency, independent servicers, or secondary market can lead to bankruptcy or a state takeover of the failing entity and create risks for lenders who depend on the guarantee agency, secondary market, or independent servicer.

Basic Operating Strategies For Lenders

The strategy that a lender adopts can be affected by the size of its student loan portfolio, management concerns, and financial abilities. The four basic funding options are

- originating and permanently holding loans;
- originating, holding temporarily, and selling loans;
- buying and holding loans; and
- securitizing loans.

Originating and Permanently Holding Loans

Originators or others that hold loans on book fund these loans by selling securities or equity or accepting deposits. Banks often use some or all such forms of funding, while not-for-profit state secondary markets only issue debt because they cannot accept deposits and cannot sell equity. Lenders' returns depend on the interest rate spread (interest income less interest expense), and other expenses, including servicing, default, and administrative expenses and taxes.

Originating, Holding Temporarily, and Selling Loans

Most lenders fund new loans by selling loans that they have originated to other lenders in secondary markets. Their returns depend on the prices that their

[21] The Financial Viability of the Government-Guaranteed Student Loan Program, U.S. Treasury Department February 1998.

purchasing lenders are willing to pay for such loans. The returns to firms that sell loans depend on the purchase price offered and the costs of financing, originating, and servicing loans until they are sold. The sales price requested by the seller depends on the advantages of selling versus holding the loans. The purchase price offered by the secondary market will depend on the returns the purchaser can earn by holding the loans or placing them into an ABS.

Buying and Holding Loans

Buying and holding loans is similar to originating and holding loans. In an originating and holding strategy, the acquisition cost of the loan depends on the costs of originations. In contrast, in a buying and holding strategy, loan acquisition costs depend on the price paid loan originators. The price the buyer is willing to pay depends on the return that can be earned by buying and holding the loan. Thus, the purchasing lenders' return fundamentally depends on the same economic factors that affect originators.

Securitizing Loans

Large lenders, both for-profit and not-for-profit, can fund loans by selling a pool of loans to a trust that in turn is funded by securities sold to investors—otherwise known as asset backed securitizations (ABS). Such sales can affect funding costs based on the equity capital needed to create the ABS and the interest expenses associated with the securities issued by the trust. As with other funding approaches, this approach is used when the overall risk/returns tradeoff appears to be advantageous. In late 1998 and early 1999, securitization of student loans had decreased significantly compared to prior years as the interest paid on ABS securities increased relative to the yield earned from student loans.

When securitizations are undertaken, the lender often can sell the loans to the pool. Accounting principles[22] require lenders to record any gain or loss as income at the time of the sale. Thus, the expected value of all future net revenues from the student loans is placed on the balance sheet at the time of the sale. This transaction boosts current income for the lender and decreases future income since the income that would have been realized over the life of the loan is realized immediately upon the sale. However, if loans in the pool do not perform as expected, losses may accrue to the lender even after the sale to the pool. In a securitization, the lender has typically retained the residual cash flows from the loans as well as the servicing responsibility.

[22] Financial Accounting Standards Board 125.

When the loans are placed in the pool, they can only be used to support payments to the investors in the ABS. This insulates the investor in the ABS from potential financial problems and bankruptcy of the lender and thus increases the credit rating of the ABS. This permits the debt to carry a relatively lower interest rate. The value of this decrease in interest rates on the debt must be balanced against the amount of capital needed to fund the ABS and other costs and revenues associated with creating and operating the ABS.

Sallie Mae has been a leader in securitizing student loans. Sallie Mae securitized $1.0 billion of student loans in 1995, $6.0 billion in 1996, $9.4 billion in 1997, $6.0 billion in 1998, $4.0 billion in 1999, and $6.5 billion by May 2000.

At times, the rates that must be paid on securities sold by the pool are considered economically infeasible for lenders. For example, in late 1998 securitization ceased and in 1999 securitization of student loans had not completely recovered because the returns required by investors increased substantially compared to the interest earnings available from student loans. This occurred, in part, because student loan rates were tied to T-bills and the "flight to quality" in the fall of 1998 created relatively low T-bill rates compared to other rates. In addition, disruption in the markets for long-term private debt securities generally affected student loan ABS. However in the first part of 2000, securitization of student loans has accelerated to higher levels. (See chapter 4 for further discussions of this point.)

Relative Importance of Revenues and Expenses

The primary source of income for all lenders is interest revenue and special allowance payments from student loans. For example, in the third quarter of 1999, the gross yield to lenders on Stafford loans in repayment was 7.62%, and total interest costs varied from 5.33 to 5.94% based on the funding option used by the lender as estimated in chapter 4.[23] Interest expenses varied based on operating strategies, funding sources, hedging decisions, creditworthiness of the student loan lender, and the extent to which borrowed funds are used to hold student loans. The level and volatility of the interest spread[24] (interest income and interest expenses) is a primary determinant of the return and return volatility for lenders and their stockholders. (For a further discussion of the volatility of interest rates and the spread between T-bill and commercial interest rates, see chapters 2 and 4.). Other expenses as percentage of assets are around 100

[23] Interest expenses are a percentage of borrowed funds, while interest income and SAP are a percentage of the student loan assets.

[24] To determine the interest spread as a percentage of assets, the interest expense as a percentage of assets must be determined. This requires an adjustment for equity capital funding.

basis points[25] and vary with the efficiency of general overhead and servicing, with some providers experiencing higher expenses and others lower expenses.[26]

Administering, servicing loan expenses and other overhead costs can vary with portfolio size, operating efficiency of the lender or servicer, the size of loans and the composition of the student loan portfolio. Administering and servicing expenses also vary across several dimensions, such as loan activity (for example, originations, claim filling, or skip tracing) and student's loan repayment status (for example, whether the student is in school, is in the loan grace period, or in a loan repayment period). Lenders with larger loan balances from schools with historically low delinquency rates often pay a relatively lower servicing fee, or cost per dollar of loans outstanding, than lenders with smaller portfolios with higher delinquency rates. The actual servicing fee can be related to basic factors that affect costs, such as delinquency rates, type of school, and size of the loans or accounts. Independent servicers may charge for indemnification, computer tape processing, report programming and editing, as will as other specific services. In addition, lenders with large portfolios often obtain size-based break points in servicing fee schedules, according to some servicers, since servicing costs do not vary directly with loan size and have a fixed cost component as documented by CBO and CRS in 1998.[27]

For-profit lenders are often judged in terms of their return on equity by stockholders and other participants in capital markets. The stability of returns on equity over time is valued by investors. The return on equity depends on the return on assets, taxes[28] and the lender's equity to asset ratio. As taxes or the equity to asset ratio increases, the return on equity decreases. However as the equity to asset ratio decreases, leverage increases and risk increases.

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[25] For example, in a 1998 study by the Treasury, servicing costs were estimated to be 95 basis points per dollar of loan. During interviews with servicers, conducted by Study Group staff, a range of 100 to 135 basis points was reported by one company providing servicing to lenders.

[26] This is an estimate based on interviews conducted by GAO and includes the cost associated with marketing student loans.

[27] The Financial Viability of the Government-Guaranteed Student Loan Program, Department of the Treasury, 1998, and The Profitability of Federally Guaranteed Loans, Congressional Budget Office in a March 30,2000, letter to the Honorable Pete. V. Domenici Chairman of the Committee on the Budget, March 30,1998.

[28] The effect tax rate on corporate returns can vary but the average effective corporate tax rate as reported in the June 1999 Federal Reserve Bulletin was around 33 basis points.

CHAPTER 2: PROPERTIES OF RELEVANT INTEREST RATES AND THEIR DETERMINATION

Lender returns on new Stafford loans made under the Federal Family Education Loan Program (FFELP) were indexed to the interest rate on Treasury bills from 1977 until the year-end of 1999[1]. Treasury bill rates have long been benchmark rates in the short-term sector of financial markets – money markets -- and have some unique features. With the growing breadth, sophistication and internationalization of money markets, however, some private rates have become increasingly important. Two commercial rates, the London Interbank Offer Rate (LIBOR) and the Commercial Paper (CP) rate have been considered as alternatives to the Treasury bill rate for the purpose of indexing lender returns on FFELP loans. These rates have been identified as representative of private money market conditions, which may be more indicative of lenders' costs of funds than T-bill rates. This chapter will consider properties of these alternative rates and their determination. It will show their historical levels and the spreads between them, their historical volatility and the outlook for rates as projected by CBO and the Administration. Thus, this chapter addresses major parts of questions (1) and (2) in the congressional mandate for the study which deal with comparing the volatility and liquidity in the markets for T-bills, LIBOR or commercial paper.

TREASURY BILL RATES

Treasury bills are issued by the federal government in maturities up to one year. The shortest-term Treasury securities regularly issued are bills with initial maturities of 91 days, the maturity relevant for the largest part of FFELP.[2] Investors can purchase 91-day Treasury bills either by submitting a bid at a weekly auction or on the secondary market, which is quite active. Because of the depth of the secondary market, Treasury bills are frequently regarded as the most marketable of money market securities.

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[1] Lender formula returns for most guaranteed student loans were indexed to auction rates for 91-day Treasury bills, to which attention of the Study Group was directed by the Congressional mandate. However, the borrower rate for PLUS loans issued between 1987 and 1998 is set annually based on the auction rate for 52-week Treasury bills in the last auction before June 1, and SAP payments are made quarterly and indexed to 91-day T-bill rates.

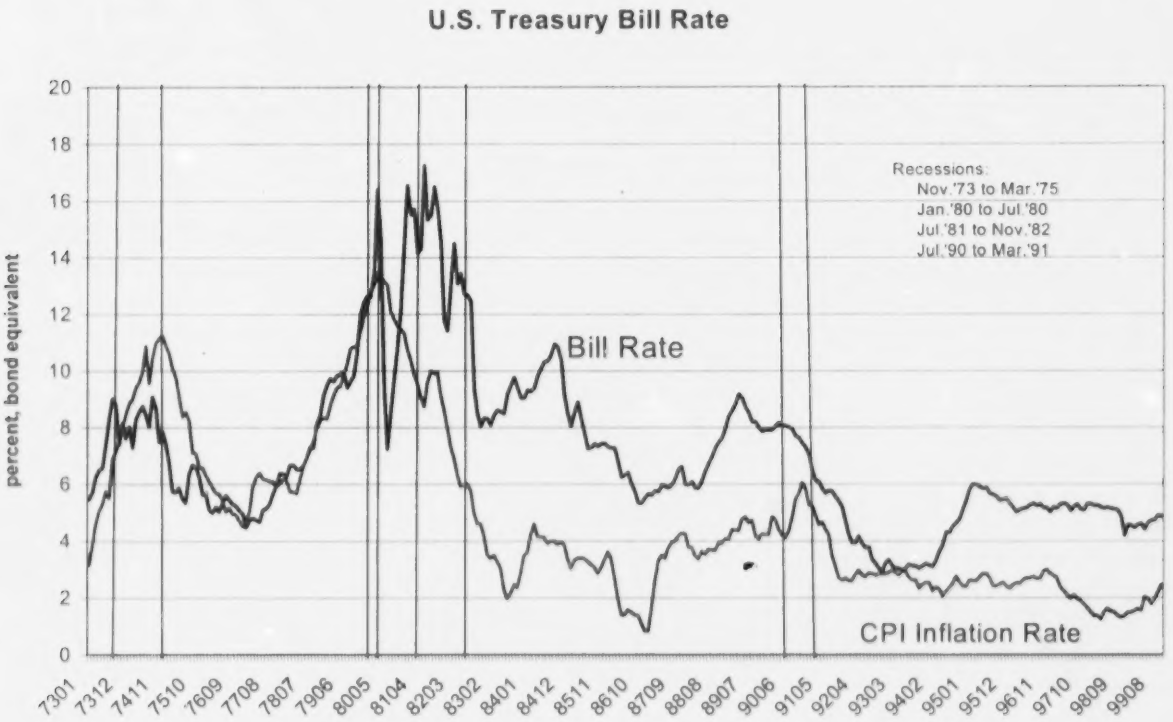
[2] Shorter-term, cash management bills are used to help manage the federal government's cash flow, but these are not issued on a regular schedule.

Treasury securities are free from credit risk. This absence of credit risk distinguishes these securities from other commercial debt instruments, including those considered in this chapter.

The interest rates on these (and other) securities move as money and credit market conditions change, such as changes in the relative supply and demand for alternative financial instruments as the federal budget continues to generate surpluses that reduce the supply of Treasury issuances. Because Treasury securities are not subject to credit risk, movements in their interest rates are dominated by general money and credit market conditions. Private sector debt instruments differ from Treasury securities along two main dimensions: credit risk and liquidity. Changes in perceived risk and liquidity of private instruments, and investor attitudes toward risk and liquidity, are additional factors that move private sector interest rates. Usually such changes do not move Treasury yields. In exceptional circumstances, a "flight to quality" -- i.e., a sharply heightened demand for safety -- may cause the level of Treasury yields to decline as the demand for Treasuries increases. Various Treasury security rates have been used as benchmarks to help price riskier or less liquid fixed-rate securities as well. In addition, Treasury yields are one of the money market rates used to index variable-rate debt instruments, such as some business loans and mortgages.

Treasury bill interest rates tend to rise when expected inflation rises, when the economy (and therefore credit demand) is strong, when monetary policy is tight, and when fiscal policy is loose. Figure 2.1 below shows the interest rate on 91-day Treasury bills since 1973. (Appendix V discusses data sources and calculations used in this chapter.) The effect of inflation on Treasury bill rates is apparent at first glance: the rates rose in the late 1970s as inflation rose and fell in the first half of the 1980s as inflation fell. The figure also includes vertical line to indicate the four recessions that the U.S. economy experienced in this period. As can be seen from the figure, Treasury bill rates tend to fall during recessions and rise during booms.

Figure 2.1 – U.S. Treasury Bill Rates (showing bill rates, inflation & recessions)



Source: U.S. Treasury Department

More specifically, Treasury bill rates rose with rising inflation in the late 1970s and peaked at around 17 percent in 1981 and 1982. Then bill rates and inflation both fell, with inflation falling more rapidly. Rates rose in 1989-90, as monetary policy responded to perceived dangers of a reacceleration of inflation. They fell as the economy encountered a recession and as the Federal Reserve encouraged recovery through low interest rates into the first part of 1994. Reflecting the strong economy that had emerged by then, Treasury bill rates turned up once again in 1994, but they remained considerably below their average levels in the 1970s or the 1980s. A sharp shift of investors' preferences toward safe and liquid assets -- "flight to quality" – developed in the fall of 1998, following several international and domestic financial disturbances. This "flight" from other assets into Treasury bills lowered Treasury rates, and the ensuing easing of monetary policy held them below mid-1998 levels through October 1999. In November, anticipation of the final Federal Reserve policy change, which fully reversed the fall 1998 easing, pushed bill rates back to early 1998 levels.[3]

Table 2.1 shows the average rate on a bond equivalent yield, 365 day basis, on 91-day Treasury bills at auction for successive two-year periods since 1973 and also shows the coefficient of variation, a measure of the relative volatility of these rates.[4,5] The coefficient of variations is the measure of volatility or dispersion of a variable divided by the mean value of the variable. Thus, the larger the coefficient of variation the greater is the relative volatility of the rate. As indicated in the table, greater relative volatility in the Treasury bill rate tends to be associated with periods of cyclical disturbance and volatile monetary policy: the battle against inflation and its consequences in 1977-82 and the cyclical stimulus and subsequent restraint in 1991-94.

Each 10-15 year period also reflects its own institutional changes in conduct of debt management and monetary policies, as well as external events that shape the economy. For example, the 1940–55 period is largely irrelevant because the Treasury and the Federal Reserve were freezing short-term rates during most of that time, to facilitate financing of World War II. Early in the 1970s, the international financial architecture was substantially modified as the Bretton Woods framework of fixed exchange rates and the peg of the dollar to gold were dismantled. Ceilings on bank deposit rates (Federal Reserve Regulation Q) were largely phased out in the early 1980s, and reserve requirements on off-shore branches of banks and on international banking facilities in the United States were relaxed. These changes accelerated the

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[3] There were three one-quarter point reductions in the Federal Reserve's "target" federal funds rate – the rate sought through open market operations and hence the index of monetary policy -- in the fall of 1998 (September, October, November) followed by three one-quarter point increases in July, August and November, 1999 with further increases in 2000.

[4] The rates are monthly averages of rates at auctions during the month, expressed as bond-equivalent yields. Treasury bill rates are commonly quoted as "bank discount" rates, because their entire return results from the difference between purchase and sale price. The bond-equivalent basis makes yields comparable among instruments of differing maturities, taking into account the cash payment of principal and interest .

[5] Volatility is measured here by the coefficient of variation, the ratio of the standard deviation of the rate to its mean. The standard deviation is a statistic that measures the distribution of monthly deviations (positive or negative) of actual rates from the mean (average) rate for the whole period being considered.

integration of domestic and overseas financial markets that had been taking place gradually with the growing role of multinational corporations. Greater sophistication of small investors, the evolution of money market and other mutual funds, heightened competition between commercial bank and nonbank financial sources for business all led to more efficient markets, culminating most recently in the emergence of large scale markets for certain financial derivatives. Because of the dramatic changes in the financial landscape, consideration of other rates will be limited in the discussion to follow to the period since 1973.

Table II.1: Levels and Volatility of Three-month Treasury Bill Rates

monthly data from beginning to end of indicated period

	(----------percentage points ----------)	
	Mean Level	Coefficient of Variation
1973-74	7.70	0.13
1975-76	5.56	0.11
1977-78	6.44	0.21
1979-80	11.30	0.22
1981-82	13.00	0.21
1983-84	9.44	0.09
1985-86	6.94	0.15
1987-88	6.44	0.12
1989-90	8.08	0.06
1991-92	4.55	0.25
1993-94	3.73	0.23
1995-96	5.41	0.06
1997-98	5.08	0.06
1999	4.64	0.04
1973-84	8.91	0.35
1985-99 (Sept.)	5.69	0.27

Note:
The coefficient of variation is the ratio of the standard deviation to the mean. The standard deviation is a measure of the dispersion of the distribution of observations around the mean or the. period being considered.

Source: Calculated

COMMERCIAL PAPER AND LONDON INTERBANK OFFER RATES

Many large, well-known companies, both financial and nonfinancial, issue short-term, unsecured debt, commonly known as commercial paper. Maturities for commercial paper range up to 270 days. Longer maturities would require registration of the debt with the Securities and Exchange Commission. Most often, commercial paper is issued with maturities of less than one or two months; the average maturity is estimated by the Federal Reserve currently to be about 30 days.[6] The paper may be either directly placed with investors or most importantly mutual funds, or issued through dealers. Dealers participate in the majority of the issuance and help to provide liquidity in a market where the short-term nature of the paper works against secondary market trading. (See the following chapter for a further discussion of the characteristics of this market.) Despite the important role of dealers in the market, historically, data on financial commercial paper – the relevant data for the FFELP index issue – came from large issuers who placed their paper directly with investors.[7] (See appendix VI.)

High-grade commercial paper -- that issued by borrowers with the highest credit ratings from rating agencies -- is generally considered to be a relatively safe asset. There has been only one major default on commercial paper in the last 40 years, which occurred in 1970 when Penn Central Railroad failed and defaulted on $82 million in commercial paper. Since then, almost all commercial paper has been rated by at least one of the major rating agencies.

Because the paper is unsecured, these credit ratings and the standing of the issuer are particularly important in determining the interest rate. For example, for nonfinancial paper, for which the Federal Reserve tabulates rates on commercial paper by alternative credit ratings, the difference between interest rates on AA-rated paper and the lower rated A2/P2 paper is about 15 to 25 basis points; a spread that may widen in periods of credit stress. Corresponding data are not available for financial commercial paper but it seems likely that similar sensitivity to credit ratings would apply. With the widespread use of ratings from rating agencies, the experience of individual firms is less likely than previously to rock the market as a whole. The rate for a particular credit rating reported by the Federal Reserve is, however, a statistical calculation and rates are sometimes quoted in the press by individual issuing firm name.

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[6] See the Federal Reserve web site, *www.bog.frb.fed.us/releases/*, which provides not only data on commercial paper rates but information about the instrument and the statistical series (the latter is also included as appendix VI to this report). Staff comments have indicated that the average maturity ranges between 30 and 45 days.

[7] Presently, these data come from the trust company that handles almost all CP transactions and is considered to be highly reliable. This means there is now no role in the data collection process for subjective quotation of rates by dealers. Previously, for financial paper, dealers were not involved in the data collection because the quotes were on directly placed paper. Consequently, the statistical series for financial paper was not subject to the series break, in September 1997 (when the new collection methods were adopted), that applied to nonfinancial paper. See discussion in the following chapter.

LIBOR, the London Interbank Offer Rate, is the reference rate on U.S. dollar-denominated inter-bank placements in London. Hence, it is the interest rate on dollar-denominated offshore loans from banks with temporary "excess" funds to banks facing strong demands for funds, either for dollar-denominated loans overseas or from their home offices. These interbank loans are for a fixed term and are made in large denominations. (See appendix VII.)

LIBOR also serves as a reference rate for a number of other transactions. For example, the Federal Reserve reports on reference rates used for "repricing" (periodic re-setting of the rate) on bank loans, based on one of their official surveys. The survey shows that, among domestic banks and U.S. branches and agencies of foreign banks, so-called "foreign" money market rates – almost assuredly LIBOR in some currency -- are the most frequently used reference rates for loans that mature or are subject to repricing within 31 to 365 days. [8] This re-pricing period is the most comparable to student loans. In the securities market, the Securities Data Corporation has reported that about 70 percent of publicly issued, taxable floating rate securities were indexed to LIBOR in 1998, up from about 50 percent in 1990. The second most common index in 1998 appeared to be bank prime, accounting for about 7 percent; the Treasury bill rate was the index for 3 percent of the issues and commercial paper for less than one percent of issues. Floating-rate securities were 43 percent of total securities issuance.

The British Bankers' Association's "fixing " of LIBOR is the standard measure of "the rate" for LIBOR used in financial markets. On a daily basis, the Association polls the offer rates of 16 large banks that broadly reflect the activity in the interbank market. The banks' responses, for each specified maturity of contract, are ranked and the average of the middle eight determines the LIBOR fixing.[9]

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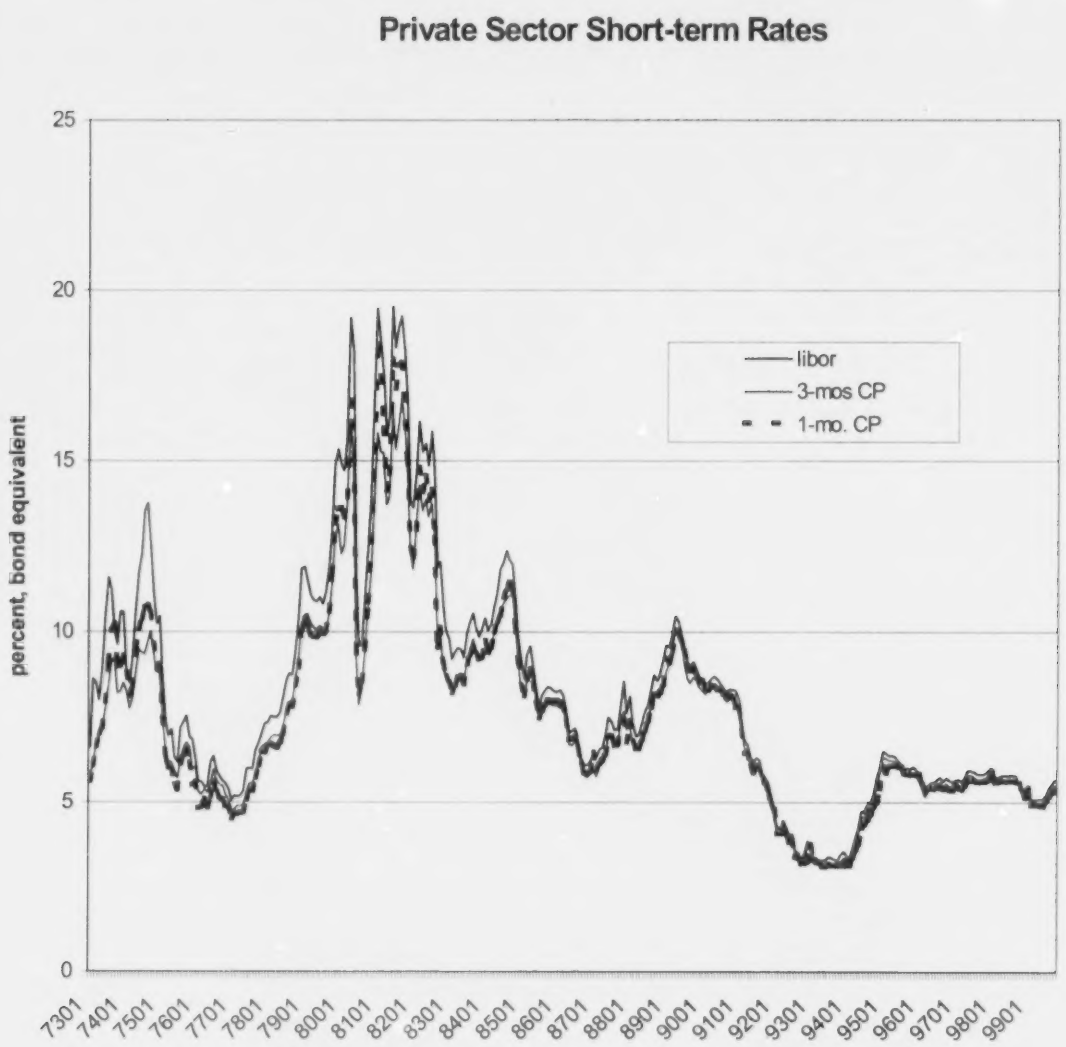
[8] Information is taken from the Federal Reserve release, "Survey of Terms of Bank Lending." This survey also shows that the largest share of new loan extensions -- but probably a smaller share of loans outstanding -- is accounted for by loans that reprice daily, with federal funds as the most common base for pricing. The third most common base for pricing is the prime rate, used most commonly for loans that reprice at the lender's option or have more than a year to repricing or maturity.

[9] The banks in the BBA sample are active institutions frequently engaged in the interbank placement market. Rates quoted for the fixing that diverged from their other market activity would be noticeable, so rates in this highly competitive market are likely to be representative of current credit conditions and assessments of risks.

Figure 2.2 shows the rates on one-month and three-month commercial paper and the rate on three-month LIBOR since 1973.

Figure 2.2: Private Sector Money Market Rates



Source: U.S. Treasury Department

All three rates move roughly together, although significant differences have occasionally arisen. The figure shows that, like Treasury bill rates, these rates were high early in the 1970s, fell somewhat in the mid-1970s, and then peaked around the end of the decade at the time of high inflation and stringent anti-inflationary monetary policy. These private rates then fell with recession and with the slowing of inflation after 1982; they rose again in the late 1980s before dropping sharply in the early-1990s recession. With continued slow inflation, rates remained low until the first quarter of 1994. Then, they all turned up, reflecting a stronger economy and an increase in the federal funds rate engineered by the Federal Reserve. Like Treasury bill rates, LIBOR and commercial paper rates were lower, on average, in the 1990s than in the 1970s and 1980s. And like Treasury bill rates, they dipped in late '98 - early '99 on the basis of the Federal Reserve's policy easing and turned up subsequently as the Federal Reserve moved to greater restraint. These private sector rates, however, moved up more quickly than Treasury rates to surpass their year-earlier levels and jumped in October as contracts were made with maturities near the turn of the millenium. It appears that liquidity concerns surrounding possible Y2K problems had a disproportionate effect on private instruments, while the Treasury market benefited more from steps taken and announced by both the Federal Reserve and the Treasury to ensure liquidity.

Table 2.2 reports the average levels and volatilities of LIBOR, three-month CP and one-month CP, over two-year intervals and over the longer periods before and after 1984. The similarities among these rates that appear in the chart are confirmed in the tables. Indeed, with the allowance for differences in rate levels that is embedded in the coefficient of variation, the volatilities of the various rates are strikingly similar. All the rates show sensitivity to the inflation and activist anti-inflation policy of 1977-82 and to the countercyclical swings in policy in 1991-94.

Table 2.2: Comparative Levels and Volatilities of Money Market Interest Rates

	91-day Treasury Bill		3-month LIBOR		1-month LIBOR		3-month CP		1-month CP	
	Mean Level	Coef of Var	Mean Level	Coef Of Var	Mean Level	Coef of Var	Mean Level	Coef of Var	Mean Level	Coef of Var
1973-74	7.70	0.13	10.30	0.17	10.14	0.16	8.32	0.14	8.83	0.17
1975-76	5.56	0.11	6.35	0.14	5.83	0.13	5.84	0.11	5.53	0.13
1977-78	6.44	0.21	7.55	0.25	7.24	0.23	6.86	0.23	6.68	0.24
1979-80	11.30	0.22	13.30	0.22	13.05	0.24	11.46	0.19	11.89	0.23
1981-82	13.00	0.21	15.33	0.19	15.08	0.21	13.27	0.19	13.82	0.21
1983-84	9.44	0.09	10.42	0.10	10.22	0.09	9.57	0.09	9.59	0.10
1985-86	6.94	0.15	7.72	0.13	7.69	0.12	7.31	0.13	7.39	0.12
1987-88	6.44	0.12	7.68	0.11	7.50	0.11	7.18	0.11	7.16	0.11
1989-90	8.08	0.06	8.90	0.08	8.89	0.07	8.58	0.08	8.67	0.07
1991-92	4.55	0.25	4.97	0.25	4.90	0.26	4.81	0.26	4.76	0.26
1993-94	3.73	0.23	4.08	0.24	3.88	0.23	3.95	0.25	3.79	0.23
1995-96	5.41	0.06	5.85	0.05	5.79	0.05	5.69	0.06	5.67	0.05
1997-98	5.08	0.06	5.73	0.03	5.68	0.03	5.60	0.03	5.56	0.03
1999 (through September)	4.55	0.04	5.09	0.04	5.02	0.03	4.99	0.04	4.93	0.04
Average for period:										
1973-84	8.91	0.35	10.54	0.35	10.26	0.37	9.22	0.33	9.39	0.37
1985-99	5.71	0.27	6.38	0.28	6.29	0.28	6.12	0.27	6.10	0.28

Source: U.S. Treasury Department

In general, these commercial rates are much more similar to each other than any of them is to the Treasury bill rate. Differences appear from time to time, most significantly before 1985. As previously mentioned, changes in market participants' perceptions of the relative risk and liquidity of the instruments, and in market participants' attitudes toward that risk and liquidity, can lead to differences among these rates and Treasury bill rates. Some of these differences are discussed below in looking at spreads between these private sector rates and Treasury rates.

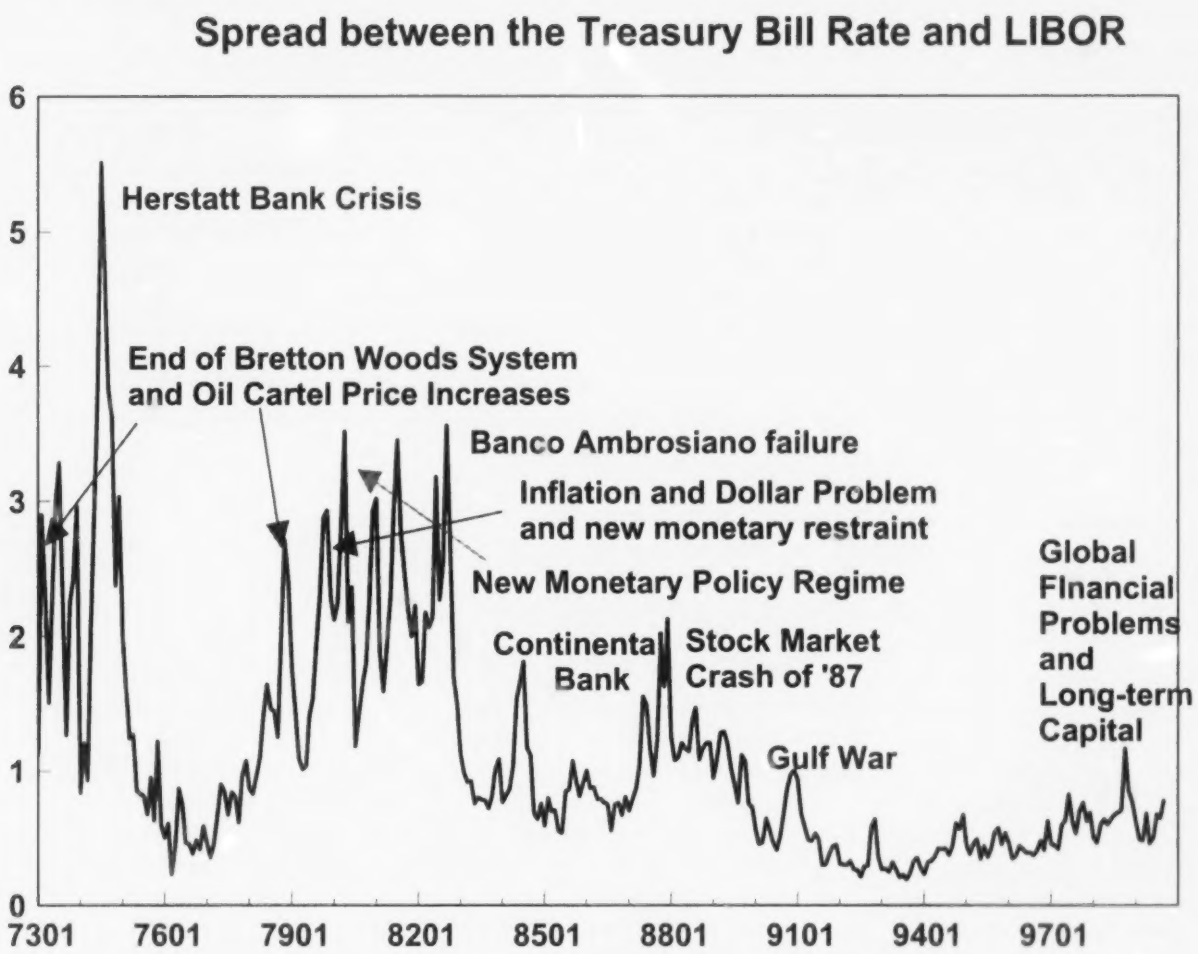
Spreads Between Rates and Volatility of Spreads

Interest rates on commercial or private instruments reflect credit risk, which is the critical difference between them and Treasury rates. That risk may be perceived to change over time, which leads to movements in these rates in addition to the effects from the changing forces of aggregate credit demand and supply. Consequently, rates on private instruments are not likely to move in lock step with Treasury rates of comparable maturity. Particularly at times of stress in financial markets generally, private rates such as LIBOR or commercial paper may diverge from Treasury rates to reflect larger risk premiums.

In the 1970s and early 1980s, the banking system was especially vulnerable to sharp upward movements in short-term rates because regulatory ceilings kept banks from responding with their own deposit rates, thereby creating risk of deposit loss. And, even if they could have raised their deposit rates, the effects on their profits would have been adverse as rates on their assets were generally fixed for longer periods than the term of their liabilities. Additionally, during the period of evolving integration of onshore and offshore financial markets, banks played a major role in linking markets and transferring funds. but information about counterparties was incomplete and facilities for clearing transactions were less fully developed and slower to function than in the electronic age. Consequently, banks have been perceived to be especially vulnerable to financial stress, and LIBOR has tended to move more in absolute terms than the Treasury bill rate. As shown in table 2.2 (discussed in the preceding section), however, the difference is usually very slight when movements in rates are scaled by respective rate levels. The bill rate was more volatile in the recent, 1997-98, period because of the "flight to quality" into bills, which lowered bill rates as investors became increasingly concerned about the credit and liquidity risks associated with other instruments.

As shown in figure 2.3, movements in the spread between 3-month LIBOR and Treasury bill rates show the tendency for LIBOR to move up relative to the bill rate in periods of stress. The Herstatt bank crisis, in June 1974, involved only a small bank. International counterparties, however, were unable for a period of hours to clear transactions potentially affected by its failure because of time differences within Europe and between Europe and the United States. This hiatus created extreme uncertainties

Figure 2.3:



Source: U.S. Treasury Department

about counterparties' actual circumstances and generally underscored the vulnerability of banks with offshore exposure in this early stage of floating exchange rates and integration of financial markets. At the same time, inflation rates and international financial flows around the world were disrupted by OPEC's hike in oil prices. Changes in the international financial structure and oil price inflation both could be expected to affect Treasury bill rates, as well as rates on private instruments. The uncertainties injected into the financial environment early in the 1970s, however, seemed to imply new risks for the banking system that heightened private sector risk premiums, in addition to increasing the volatility of Treasury rates. Hence, the spread between LIBOR and Treasury bill rates increased erratically in this period.

The second round of OPEC oil price increases in the late 1970s, coming in a period already characterized by rising inflation, a depreciating dollar and higher-than-usual peace-time budget deficits again, created an atmosphere of uncertainty that was perceived as entailing heightened risks for the banking system. In 1979, a new monetary regime was established by the Federal Reserve that clearly entailed the likelihood of greater volatility of short-term interest rates. Rates would be allowed to float to clear markets, including the market for bank reserves, while the Fed targeted growth rates of the monetary aggregates much more tightly than had been the case previously (or has been the case for the past 15 years). In this more volatile environment, bank regulators changed interest ceilings, and more floating-rate debt instruments were developed to shift some of the risks of rate volatility to banks' loan customers. Nevertheless, maturity and basis mismatches on the balance sheets of depository institutions were cause for concerns exhibited in the sharp spikes of the Treasury-LIBOR (or TED, for Treasury-Eurodollar) spread.

These systemic factors have not been the only ones to affect the TED spread. The failure, near-failure or substantial stress of individual banks -- Banco Ambrosiano early in the 1980s, Continental Illinois Bank in 1984 and the known exposure of other major banks to problem debts of Latin American economies early in the 1980s --- all reflected private management decisions as well as global economic forces. Indeed, as financial markets have become more open and internationally integrated, and as market participants have become more sophisticated, it could appear that shocks can be taken more in stride. Markets overall may have become less turbulent even as individual institutions are subject to substantial variations in rates if their credit standing changes. The major stock market crash of 1987 caused a noticeable bump up in the TED spread, but it was short lived, and significantly smaller than the surges of spreads in the early 1980s. Similarly, although the Gulf war in 1990 could have threatened another round of oil price inflation, the reaction of the TED spread was relatively small. On the other hand, the events of 1998 provided a test of market tranquility and showed that the managerial decisions about risk-taking at individual institutions can be decisive factors in the behavior of the TED spread and other risk premia. Although the background of the Russian debt default created substantial unease, coming on top of losses for some institutions related to earlier exchange crises in South East Asia, the problems of a single hedge fund provided the sharpest upward jolt to the TED spread in the fall of 1998. Table 2.3 presents levels and volatilities of the spread between private sector

rates and the Treasury bill rate. It shows, as the chart suggests, that the level of the TED spread was lower in the 1985-to-present period than previously and even relative to this lower level, movements were smaller, giving a lower measure of volatility. The years 1995-96, however, were exceptionally tranquil, and volatility jumped back in 1997-98. For the commercial paper rate, there is a pronounced reduction in volatility of its spread to Treasury bill rates, beginning in the mid-1980s. The spread between the CP rate and LIBOR (both at three-month maturities) also tightened considerably at that time. Relative to that lower level, however, the volatility of the spread was about constant over the entire period considered since 1973.

The commercial paper market appears to be slightly less sensitive to the concerns about bank credit risks than LIBOR, which is exclusively a bank rate. Financial commercial paper is issued by commercial bank holding companies and investment banks, but is also issued by the financial arms of nonfinancial businesses and by finance companies serving the household sector. Consequently, the risks that impinge directly on banks may affect some parts of the commercial paper market only indirectly, making investors in paper less quick to become fearful about the instrument overall. This difference in perceived riskiness of highly rated financial commercial paper, compared to LIBOR, is likely the major factor in the smaller spread between three-month commercial paper rates and three-month Treasury bill rates than the TED spread. The average commercial paper spread was only 41 basis points in the period 1985-to-date, compared to the average of 67 basis points for the TED spread (see table 2.3).

In summary, the spreads between the private money market rates and Treasury bill rates reflect, on the one hand, the private sector credit risks. On the other hand, the occasional swings in bill rates from flights to quality and supply surprises, and the continuous importance for bills in particular of expectations about monetary policy, can add to the volatility of the Treasury bill rate. Relative to their average spread, the standard deviation of the TED spread was about 50 percent of its mean, while the standard deviation of the three-month commercial paper spread was about 60 percent of its mean. In this sense, the commercial paper spread was slightly more volatile.

Table 2.3: Comparative Levels and Volatilities of Spreads between Money Market Interest Rates

	3-month LIBOR less Treasury Bill		3-month CP less Treasury Bill		1-month CP less Treasury Bill		3-month LIBOR less 3-month CP	
	Mean Level	Coef of Var	Mean Level	Coef of Var	Mean Level	Coef of Var	Mean Level	Coef of Var
1973-74	2.60	0.45	0.62	0.82	1.13	0.60	1.99	0.48
1975-76	0.79	0.53	0.28	0.76	-0.03	-9.07	0.51	0.61
1977-78	1.11	0.54	0.42	0.66	0.25	1.20	0.69	0.48
1979-80	2.00	0.34	0.16	2.96	0.59	0.86	1.84	0.46
1981-82	2.33	0.25	0.27	1.95	0.82	0.80	2.06	0.27
1983-84	0.98	0.31	0.13	1.07	0.15	1.64	0.85	0.23
1985-86	0.78	0.17	0.36	0.43	0.44	0.49	0.42	0.29
1987-88	1.25	0.26	0.74	0.37	0.73	0.32	0.50	0.31
1989-90	0.82	0.34	0.50	0.49	0.59	0.43	0.32	0.30
1991-92	0.42	0.40	0.26	0.59	0.21	0.73	0.17	0.29
1993-94	0.35	0.36	0.21	0.55	0.06	1.59	0.13	0.46
1995-96	0.44	0.17	0.27	0.26	0.25	0.55	0.17	0.22
1997-98	0.65	0.24	0.52	0.32	0.48	0.42	0.13	0.15
1999 (through September)	0.59	0.19	0.48	0.20	0.40	0.22	0.12	0.31
Average for period:								
1973-84	1.64	0.60	0.31	1.33	0.49	1.27	1.32	0.67
1985-99	0.67	0.51	0.41	0.59	0.39	0.71	0.25	0.64

Source: U.S. Treasury Department

THE OUTLOOK FOR INTEREST RATES AND SPREADS AMONG THEM

At the time of the final study group meeting, the outlook for interest rates, taking into account credible forecasts for government budget surpluses and a generally favorable inflation outlook, was for little change in money market conditions over the foreseeable future (once transitory disturbances associated with potential Y2K problems were overcome). Interest rates for Treasury securities, forecast at midyear by the Congressional Budget Office, the Administration and private analysts, are shown in the following table.

Table 2.4: Treasury Bill Rate Projections by CBO, the Administration and Blue Chip Consensus
(in percent)

Calendar Year: →	1998 actual	1999	2000	2001	2002	2003	2004
T-bill rate:							
CBO	4.8	4.6	5.0	4.6	4.5	4.5	4.5
Admin	4.8	4.5	4.5	4.5	4.5	4.6	4.6
Blue Chip*	4.8	4.5	4.6	4.7	4.6	4.3	4.3

*Note: from June 1, 1999, *Blue Chip Financial Forecasts*, semiannual survey of long-term forecasts, p.14. This survey also provided forecasts of LIBOR, which were 30 to 40 basis points above the corresponding forecasts of Treasury bill rates.

As the table 2.4 shows, these rates are strikingly similar. Private forecasts show a decline in rates in the more distant years that likely reflects the falling inflation rate projected by these same forecasters for that period. Such a slowing of inflation is not projected by CBO or the Administration. All of these forecasters appear to expect that the favorable budget and inflation situation outweigh the upward pressure on interest rates that otherwise might result from continued strong economic expansion in the context of low unemployment.

Both federal agencies or branches make forecasts of the broad macroeconomic indicators twice a year as part of the process of projecting the federal budget. In each case, the projections reflect an assessment of developing trends in the overall economy, blending qualitative judgments of staff analysts and econometric models. The CBO's assessment of the economy is described in greater detail in its *Economic and Budget Outlook, Fiscal Years 2000-2009*, published in January 1999. The *Economic and Budget Outlook, An Update* presents their midyear revisions with somewhat less detailed overall economic assessment. For the Administration, the projections of key economic variables that underlie forecasts of budget revenues and outlays are shown in the annual budget documents and the midsession review. The *Economic Report of the President* (and accompanying Annual Report of the Council of Economic Advisers) presents more of the rationale for the contours of the economic forecast.

Both the CBO and the Administration forecast Treasury security rates in order to make projections of interest outlays in the budget. Interest rates on private securities are not

routinely forecast, but CBO undertook a special forecast exercise for this study. In this exercise, forecasts of LIBOR and CP rates were made by projecting the spreads of these rates above the Treasury bill rates that were forecast in the economic outlook. These forecasts of interest rate spreads were based on historical relationships over a 30-year period, taking into account the effects on rate spreads of inflation, the steepness of the Treasury yield curve, and the volatility of the federal funds rate as a measure of the monetary policy environment. (See appendix IV for a discussion of CBO's methodology.) As noted earlier, spreads between private sector rates and the Treasury bill rate, discussed above, are larger and more volatile when inflation is high, and when cyclical disturbances induce active and changing monetary policy. The CBO approach models these observations more formally, using an adjustment that also has the effect of giving a somewhat heavier weight in their analysis to recent experience in the more tranquil 1990s.

In making the forecasts of the Commercial Paper rate and LIBOR, CBO used their baseline forecasts of the Treasury bill rate and the spread between the bill rate and 10-year note rate. It was also projected that inflation would remain near the fairly tranquil experience of recent years and that monetary policy would continue to be relatively tranquil, implying that the federal funds rate volatility would remain low. Given these assumptions, the spread of LIBOR over the Treasury bill rate (3-month maturity in both cases) was forecast to decline from its actual level of 77 basis points in 1998 to 68 basis points in 2001 and thereafter. The spread of the CP rate over the Treasury bill rate was expected to fall from its actual level of 58 basis points in 1998 to 42 basis points in 2001 and thereafter. CBO projections and the corresponding projections of OMB are shown in table 2.5

Table 2.5: CBO Projections of T-bill Rates, Spreads and Corresponding Levels of CP Rates and LIBOR (percent or percentage point)

Calendar Year: →	1998a	1999	2000	2001	2002	2003	2004
T-bill Rate (bey)*	4.91	4.72	5.13	4.72	4.61	4.61	4.61
3-mos. CP Spread	0.61	0.47	0.46	0.44	0.44	0.44	0.44
3-mos. LIBOR Spread	0.73	0.62	0.66	0.68	0.69	0.69	0.69
3-mos. CP Rate	5.52	5.19	5.59	5.16	5.05	5.05	5.05
3-mos. LIBOR	5.64	5.34	5.79	5.40	5.30	5.30	5.30

Note: The T-bill rates are the same as in Table 4.4, converted to bond equivalent yields. The spreads were projected in CBO Memorandum "A Framework for Projecting Interest Rate Speads and Volatilities," January 2000, page 39.

In the Fall of 1999, OMB did not have significant differences with, or objections to, CBO projections of CP rates and scoring of the proposal before Congress to change the index of lender returns on FFELP loans to CP. For the 2001 Budget, however, OMB projected a spread of the CP rate above the T-bill rate of 0.57, 11 basis points above the spread projected by CBO.

CBO's scoring of interest rate changes in the student loan program includes an estimate of the probable government costs associated with the likelihood that the differences in

lender yield and borrower rate will widen more than the CBO forecast. The estimate is based on CBO's projections of possible forecast error that would lead rates to move around -- rather than equal -- the expected or forecast level. Both the projected levels of spreads and the probabilities of divergences from forecast were in the general range of the historical experience summarized in the tables on spreads and volatilities of spreads in this chapter. As the CBO report indicates, they expect, based on continued noninflationary economic expansion and fiscal restraint, that there will be a benign monetary policy environment and that spreads and volatilities will be favorably affected. Given the unusual terrain of an historically long expansion with budget surpluses not seen for decades, the underlying Treasury bill forecast is subject to considerable uncertainty. Furthermore, given the financial shocks that have occasionally disturbed markets in recent years, many resulting from increased global integration of financial markets, it would be imprudent to assume that the wider spreads of the past, which are included in historical averages, could never again occur. Therefore, in making the budget scoring projections discussed elsewhere in this report, the uncertainty of the interest rate projections as well as the forecast levels are taken into account.

Chapter 3: Liquidity of Alternative Instruments for Setting Lender Yields

The liquidity of a financial instrument is a valid concern when deciding whether its interest rate should be used as a reference rate for other financial contacts. The interest rate of a liquid instrument -- one that is issued and traded in a deep and resilient market – is more likely to reflect fundamental credit market conditions. It will be less subject than the rate of an illiquid instrument to spurious fluctuations, or excessive influence or manipulation by a limited number of issuers or investors. The congressional mandate for this study (in questions 1 and 3) requested an evaluation of the liquidity of the instruments whose rates were under consideration for use as reference rates for lenders' returns from Federal Family Education Loan Program (FFELP) loans.

The analysis that follows responds to the congressional request. In doing so, two things should be noted: first, the FFEL program had indexed both the students' rates and lenders' formula yields to the *auction* rate for three-month Treasury bills, which suggests that it is the *primary* market for bills that is relevant. Quoted Commercial Paper (CP) and LIBOR rates are also basically primary market rates. "Liquidity," on the other hand, is often thought of as a property of markets for secondary trading in already existing instruments. The distinction between primary and secondary markets may be overdrawn, however. The efficiency of a primary market will be enhanced substantially by the liquidity of the secondary market for the same security. This is so simply because a potential purchaser in the new-issue, or primary, market will pay only a limited premium over the secondary market price for an already existing security with essentially the same attributes. A liquid secondary market may not be essential for primary market liquidity, however, if the instrument has a short maturity and an essentially continuous supply of new issues. The following discussion will utilize attributes of both primary and secondary markets.

Second, it should be noted that the liquidity of the market for an instrument serving as a reference rate does not necessarily carry over to the markets for derivative instruments tied to this reference rate. This consideration is relevant for FFELP loans because securities issued by FFELP lenders that were indexed to the FFELP reference rate would be more attractive sources of finance for these lenders if markets for these derivative instruments were liquid rather than illiquid. The next chapter considers some market attributes of key sources of funding for FFELP lender; it also addresses interest rate movements in key periods and ways in which lenders deal with risks posed by receiving income indexed to one reference rate while funding themselves at other rates. Consideration of the functioning of markets for floating rate notes, asset-backed securities, swap contracts or other derivatives tied to Treasury bill rates, CP or LIBOR is deferred to the next chapter.

All three alternative debt instruments whose rates were under consideration for use as an index for Federal Family Education Loans -- Treasury-bills, commercial paper (CP), and Eurodollar (LIBOR) instruments -- enjoy a high degree of liquidity by conventional measures. They all trade in large markets (with varying degrees of activity) and, as

shown in the preceding chapter, generally react in similar fashions to the same macro economic events. They differ largely in credit quality, secondary-market infrastructure, and, in some cases, types of investors.[1] In general, the three instruments under consideration are competing for investor support, which forces market makers to provide a degree of liquidity for investors in these markets even if trading among other holders is limited. Members of the Study Group generally agreed with these conclusions from the following analysis of the past liquidity of the T-bill, LIBOR and CP markets. There was no consensus on how the liquidity of these markets might be changed in the future by possibly substantial changes in relative supply of these instruments.

Liquidity Is The Ability To Buy Or Sell An Asset Approximately At The Current Market Price

A security or a commodity (or the market for that security or commodity) is said to be liquid if the instruments can be readily bought and sold at approximately current market prices. Liquid markets or liquid securities have sufficiently large volume outstanding and sufficiently active trading for large transactions to be made without a substantial movement in price. Furthermore, because of active trading among investors and/or dealers, isolated events and/or erratic behavior by a single market participant are unlikely to have major effects on the market price. Liquidity is a desirable characteristic of a security for investors because they can move in or out quickly with relative capital certainty. As such, illiquidity is regarded by investors as a risk; thus, investors in illiquid debt instruments require additional compensation, usually in the form of a higher yield.

Factors that influence the liquidity of a security are the presence or absence of a large number of active market makers, widely available pricing information (transparency), and a large homogeneous pool (with respect to credit quality, issuer, maturity date, optionality, security age, etc., of securities).

Measures of Liquidity

A number of generally recognized measures of liquidity are considered in this analysis. Direct measures of liquidity are observable market characteristics, such as bid-ask spreads and trading volume. An inferential measure of liquidity is a market characteristic, such as issue volume and outstanding amounts, that allows the analysts to make indirect inferences about liquidity. Qualitative secondary market characteristics, such as the number of market makers, transparency, and homogeneity, also allow for inferences to be made about liquidity

[1] Some investors may be prohibited from investing in particular securities. Also investors' motivations for purchasing particular instruments may differ.

Direct Measures

Bid-Ask Spread: This measure is the difference between the bid price (yield) and ask price (yield) of a financial instrument. In general, instruments trading in more liquid markets exhibit narrower bid-ask spreads. This is due to the fact that the bid-ask spread represents the compensation to the market-maker for taking a position in those instruments. In deep, liquid markets, there are a lot of securities and a large volume of transactions and correspondingly a number of different market makers. Competition among these market makers narrows the bid-ask spreads. Bid-ask spreads are also affected by other factors, such as age, credit quality, maturity, and price transparency. Bid-ask spreads for specific securities are probably the best single indicator of liquidity.

Market Trading Volume: Higher trading volume (daily, weekly, or monthly dollar volume of transactions) is associated with greater liquidity because more, and potentially larger, transactions can occur without materially affecting the price.

Inferential Measures

Amount Outstanding: The greater the total face value outstanding at any point in time, the greater the liquidity of the instrument. This is because large outstanding amounts imply a large volume of tradable supply. Even though large amounts of outstanding securities are necessary for an active liquid secondary market, they do not guarantee it.[2]

Issue Volume: Issue volume is the gross dollar volume of new issues sold in the primary market over some period, i.e., weekly, monthly, annually. Like large outstanding amounts, large issue volumes are generally associated with higher liquidity but, again, do not guarantee liquidity. Often, new issues undergo a period of active trading in the secondary market as the new supply is distributed to investors.

Qualitative Inferential Measures

Market Makers: Generally, markets with large numbers of market makers are associated with greater liquidity, generally reflecting significant amounts of tradable supply and ensuring competitive forces that keep prices moving smoothly with fundamentals.

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[2] This can be seen in the "off-the-run" or "seasoned" Treasury note and bond market, where sizable amounts of particular securities are outstanding but very little day-to-day secondary-market trading activity occurs. This is because these securities, over time, get placed into investor portfolios and do not trade often. When trades of any sizable volume do occur, price movements can be significant, indicating a lack of liquidity.

Price Transparency: The availability of real-time information to market participants on the price at which current transactions are taking place is another characteristic associated with liquid markets. (Price transparency does not imply public information about the size or other characteristics of particular transactions.) The existence of such transparency in a market (with all the infrastructure and resources needed to provide it) suggests demand for such information from market participants and implies deep, active, and liquid markets. Price transparency also enhances liquidity in that every market participant (buyer, seller, and market maker) can observe the latest price at which transactions can be made.

Homogeneity: Homogeneous instruments are usually fungible. They have similar credit quality, issuers, optionality, etc. Greater homogeneity in a class of investment instruments is also associated with greater liquidity because the market makers' pricing systems are usually more efficient. That is, they do not have to spend time adjusting individual market prices based on a myriad of product-specific factors. Established systems for ratings and determination of ratings by rating agencies enhance the liquidity of major classes of private instruments.

Any of these measures taken individually (with perhaps the exception of bid-ask spreads) can sometimes be misleading because of large differences in characteristics between primary and secondary markets for each instruments as well as large differences among secondary markets for each of the instruments.

LIQUIDITY OF VARIOUS MARKET INSTRUMENTS

This section presents an examination of liquidity measures for each of the three instruments whose rates are under consideration as reference rates for FFELP lenders' returns. Because this examination is focused on the markets for the reference-rate instruments, it does not cover all the liquidity issues that may be relevant to the potential volatility of lenders' total interest spreads between interest returns and interest costs. The latter may be affected also by the market characteristics of derivative instruments used for funding. These issues are addressed in the following chapter. The following analysis is also largely focussed on data and professional observations of the development of T-bill, LIBOR, and CP Markets to date. It is recognized that the relative supplies of securities in these markets may be changed substantially in the future by federal budget developments. Such prospects are uncertain and entail judgments on which the Study Group members did not agree. The differences in judgment are noted at the end of the chapter.

3-Month Treasury Bill (T-Bill) Market Liquidity

The 3-month Treasury bill market is characterized by a large number of market participants, both buyers and sellers. There are currently 30 primary government securities dealers; these are large money center banks or investment banks that are recognized by the Federal Reserve for bilateral transactions, are subject to review, and are subject to requirements for participation in the government securities market. They stand ready to make a market in all government securities, including T-bills.[3] In addition, T-bills are a popular short-term investment vehicle for a number of corporate, institutional, and private investors, including money funds and banks, as well as official institutional investors such as central banks here and abroad.[4] There is generally a large tradable supply because the Treasury conducts bill auctions on a weekly basis. Two-way price transparency is excellent, with a number of vendors providing market participants with real-time pricing and trading volume information on T-bills. Unlike CP, where rates differ by credit rating, or the possible tiering in the Eurodollar market, T-bills have a unique and homogeneous credit quality.

Bid-Ask Spreads

Bid-ask spread data for 3-month T-bills comes from the Department of Treasury's Office of Market Finance. The data, which are obtained by the Treasury from the trading desk at the Federal Reserve Bank of New York (FRB-NY), are available since August 1988. For the period from August 1, 1988, to August 20, 1999, the data indicate that the bid-ask spread (BDR basis)[5] has averaged 1.95 basis points. The bid-ask spreads on 3-month T-bills remained steady at 2 basis points until late October 1998, when the spreads started to narrow to an average spread of 1.38 basis points in 1999. (See figure 3.1.)

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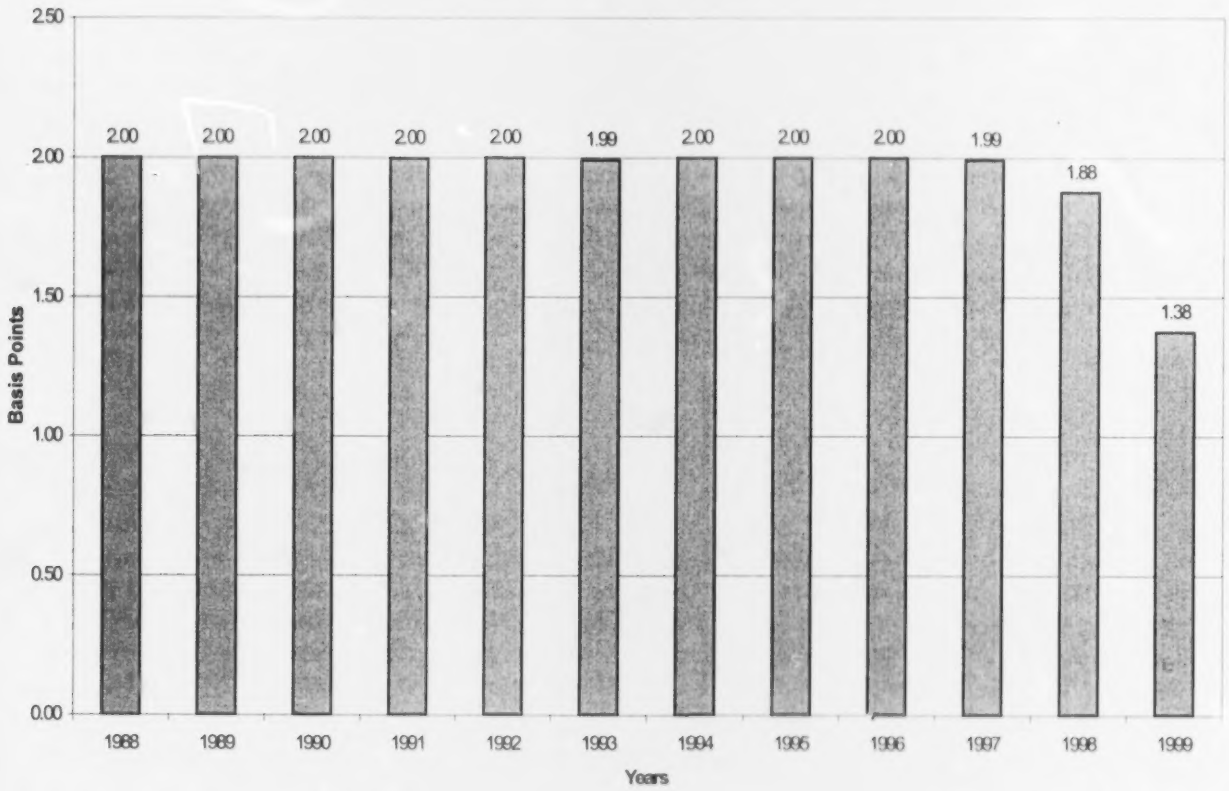
[3] The number of primary dealers has fluctuated, rising from 18 in 1960, when the system started, to a peak of 46 in 1988, largely reflecting trends in the structure of the securities market. Primary dealers tend to be multiline firms dealing in many other securities, as well as Treasuries. The securities business and the number of firms in it expanded sharply in the 1980s, followed by a period of mergers and consolidation in the investment and commercial banking business.

[4] Of the stock of Treasury securities outside of the Federal Reserve and federal government accounts as of the June 1999, 39 percent was held by foreign investors and foreign and multinational official institutions; about 16 percent was held by individuals, businesses, and local government operating accounts; and about 19 percent was held by depository institutions and mutual funds. *U.S. Treasury Bulletin*, December 1999, page 50.

[5] Bank Discount Rate basis.

Figure 3.1: Average Annual Bid-Ask Spreads For 3-Month T-Bills



Source: U.S. Treasury Department

Secondary Market Trading Volume

Primary dealers' transaction data (purchases and sales) for all Treasury bills are collected by the FRB-NY and published in the *Federal Reserve Bulletin*. The data, which we are using as a proxy for 3-month T-bill trading volume, are monthly averages of daily transactions since August 1988. The data show that bill transactions peaked in 1996 and have since fallen back to 1988-1991 levels. For the period August 1988 through April 1999, daily trading for all bills averaged $40.1 billion, with a standard deviation of $9.2 billion (see figure 3.2.). For all Treasury securities, dealer transactions volume tends to be a bit above 5 percent of the outstanding stock outside of official Federal Reserve and U.S. government holdings.

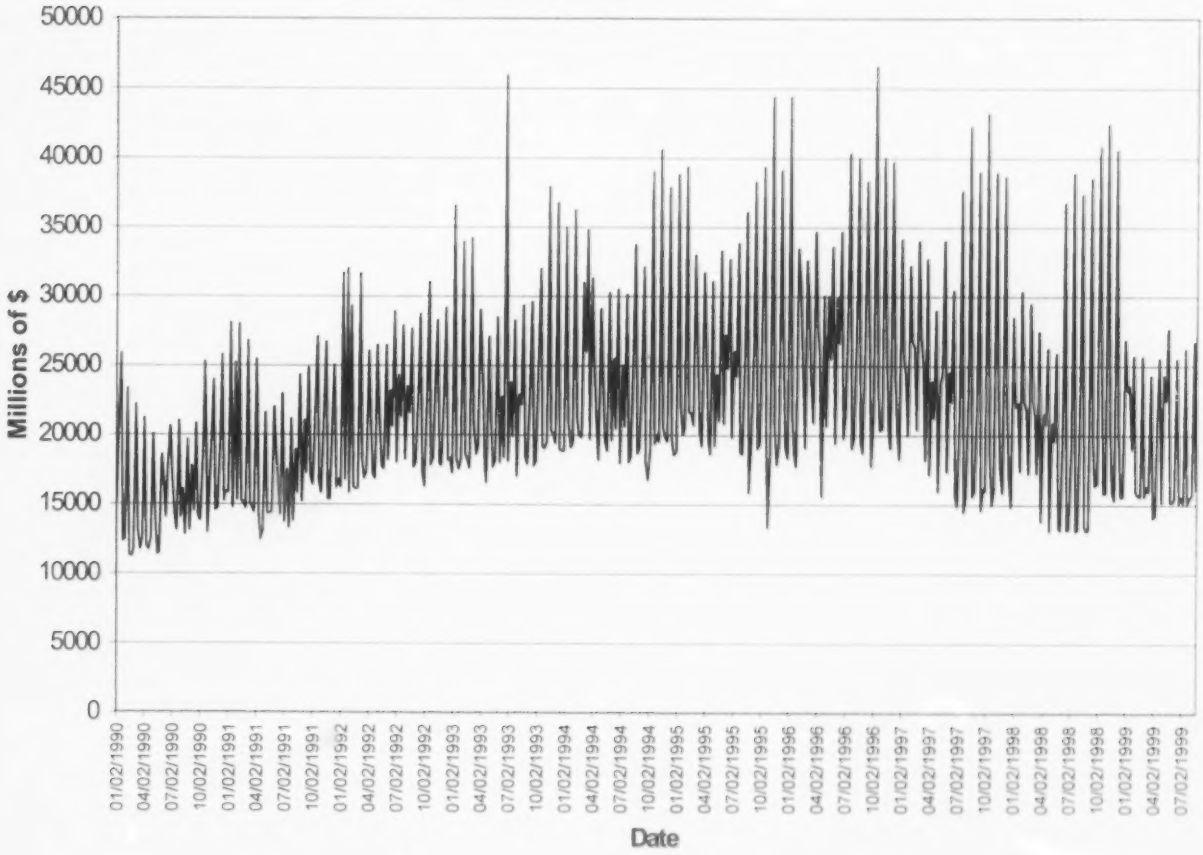
Figure 3.2: Dealer Transactions in Treasury Bills
Monthly Average of Daily Data 8/88 to 4/99

Source: U.S. Treasury Department

Outstanding Amounts

The total amount of T-bills outstanding with 3 months to maturity is greater than the weekly issue volume of 3-month bills. This is because sales of 3-month bills are re-openings of 6-month bills that have been outstanding for 3 months. Similarly, every fourth 6-month bill is a re-opening of 1-year bills that have been outstanding for 6 months. In addition, there may be some outstanding long-dated cash-management bills that have coincident maturity dates to the 3- or 6-month bills issued in regular weekly auctions. Total private holdings of outstanding 3-month bills from January 1, 1990, to August 16, 1999, averaged $22.0 billion (private holdings exclude holdings of the Federal Reserve and other federal agencies and trust funds). Private holdings of 3-month bills had a standard deviation of $7.2 billion. (See figure 3.3.)

Figure III.3: Total Private Outstandings for 3-Month Bills 1/1/90 through 8/16/99



Source: U.S. Treasury Department

As figure 3.3 shows, private holdings of bills peaked in 1996 and fell in 1997 and 1998, before *turning up* in 1999. A GAO report[6] has noted that there were favorable revenue surprises in 1997 and 1998, leading to the reductions in the amount of bills outstanding. The report says: "According to Treasury and Federal Reserve officials, the amount of bills reduced was sufficiently large to cause the market for bills to become less liquid." It adds that, immediately following the April 1998 surge in tax receipts, the Treasury began to take actions so that it could reduce debt while maintaining liquid markets for its securities. These actions, which continued in fiscal year 1999, included reductions in the number of note issues (coupon securities with maturities of 10 years or less) and in the frequency of issue of remaining note maturities. The Treasury also increased the size of its regular bill issues in months of negative cash flow and made more active use of cash management bills (bills with irregular issue dates and maturities). This policy enabled the Treasury to cover irregular funding needs with lower average cash balances -- in contrast to the more costly strategy of greater reliance on periodic longer-term note issues and larger average operating cash balances. As a result of this strategy, while outstanding notes decreased 9 percent over fiscal year 1999, the amount of bills *increased* 2.4 percent.

Issuance Volume

The Department of Treasury is the source for the issuance volume data. Since the beginning of 1990, the weekly average private issue size has been $8.4 billion, with a standard deviation of $1.5 billion. (See figure 3.4)

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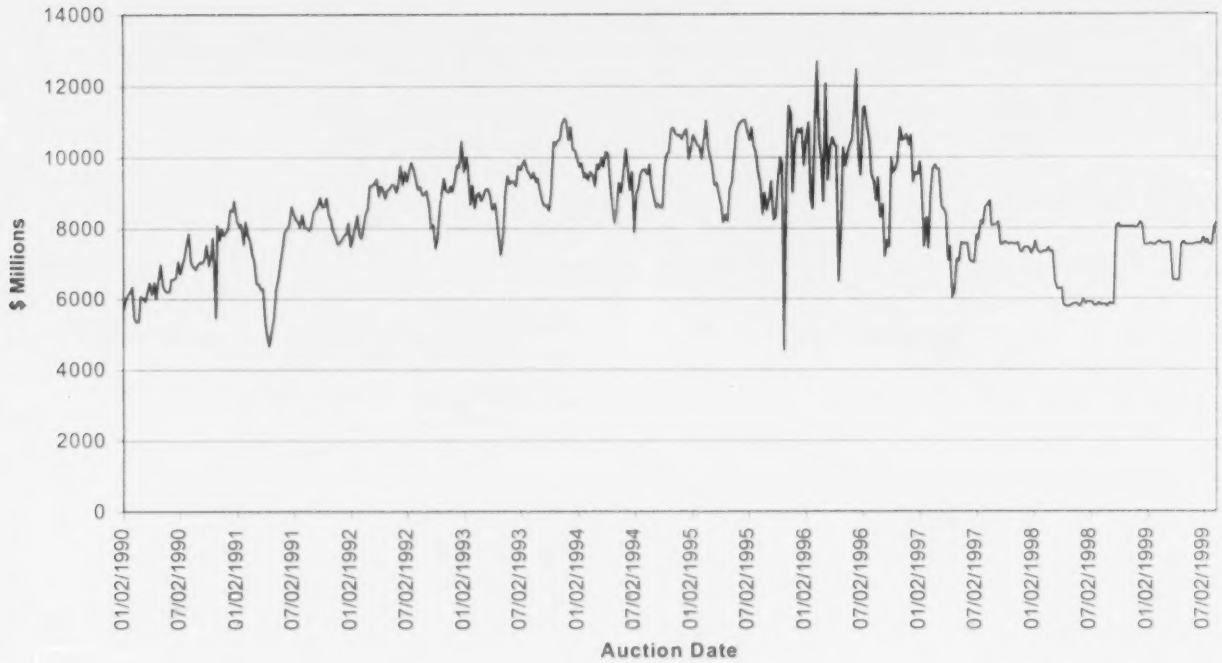
[6] (GAO-AIMD-99-279) September 1999, Federal Debt: Debt Management in a Period of Budget Surplus, p. 6.

Figure 3.4 :Weekly Private Issue Amounts of 13-Week T-Bills 1-2-90 to 8-5-99



Source: U.S. Treasury Department

90-Day Eurodollar Time Deposits (LIBOR) Market Liquidity

The Eurodollar time deposit (LIBOR) market is an interbank funds market for banks operating overseas, in much the same way the Federal Funds market is an interbank market between domestic U.S. banks[7 8] The interbank market, or more correctly the interbank placements market, is a market for Eurodollar time deposits. Having accepted dollar deposits, Euro banks can do one of two things to earn a return, either make loans or place the funds in the interbank placements market.

In the interbank placements market, Eurodollar deposits are sold either directly by Euro-banks to other Euro-banks or through brokers. The rate at which a bank offers Eurodollar deposits in the placements market is its IBOR (InterBank Offer Rate). Each bank that operates in the placements market has an IBOR rate that it changes depending on its particular supply and demand for Eurodollar time deposits. The credit quality of any bank in the placements market also affects the rate for transactions with that bank. Brokers operating in the placements market, while not revealing the names of counter-parties, reveal enough information to allow sellers of Eurodollar time deposits to assess credit quality. The implication of the credit risk inherent in lending to each bank is that time deposits bought and sold in the placements market are not homogeneous.

While rates differ across banks operating in the Eurodollar market, a reference rate has evolved that distills bank rates for highly rated banks into a single rate. The most common reference IBOR rate is the British Bankers' Association (BBA) 11 AM London Interbank Offer Rate (LIBOR) fixing. The BBA LIBOR is a reference rate calculated from a survey of 16 contributor banks (including some U.S. banks) operating in the placements market. Thus, the BBA LIBOR represents a subset of all banks that operate in the placements market. (For details on the BBA and how the BBA LIBOR is constructed. (See appendix VII.) Because of the risk differentials charged to various banks in the Euro market and the absence of comprehensive real-time quotes in this over-the-counter market, price transparency is significantly less robust for Eurodollars than for T-bills. Nevertheless, the banks involved in determining the BBA fixing rate are sufficiently well-informed and committed as participants in this market that the fixing rate is considered quite representative of market fundamentals and has become a widely used reference rate.

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[7] Marcia Stigum, *The Money Market, Dow,* Jones, Irwin, third edition, 1990.

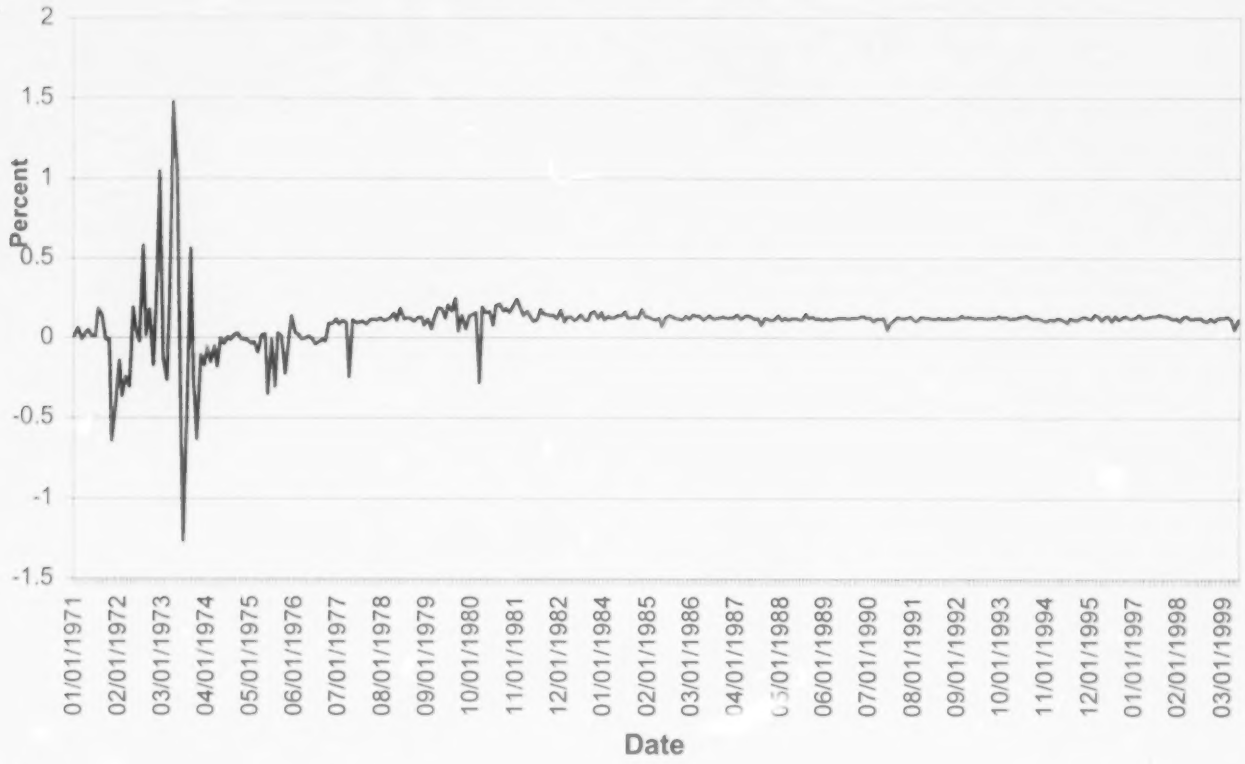
[8] Banks that operate outside the United States (foreign banks and U.S. branches) make up the Euro banking market. Eurodollars are U.S. dollars deposited for a fixed time period in a bank located outside the U.S. Eurodollar time deposits differ from Eurodollar CDs. This study concerns itself with Eurodollar time deposits for which LIBOR is the reference rate. Marcia Stigum, *The Money Market*, Dow,Jones,Irwin, third edition, 1990, p. 228. The latter are negotiable and evolved as a means of providing liquidity to investors. Eurodollar CDs trade at rates (1/8% to 1/4%) below the comparable maturity Eurodollar time deposits.

Bid-Ask Spreads

We calculated bid-ask spreads by using the 3-month BBA LIBOR against the 3-month Eurodollar Deposit Bid Rates as reported by the Federal Reserve Statistical Release *Selected Interest Rates, H.15.* These data show that the spreads have averaged 9.2 basis points. Other literature indicates that spreads between bid and ask in the Eurodollar time deposits market range around 1/8 percentage point but may depend on maturity and be subject to tiering, with a narrower spread for top credit quality[9] (See figure 3.5.) Posted spreads on major screens are about 1/8 percentage point.

[9] Stigum, *ib. id*, p.889

Figure 3.5: 3-Month LIBID - 3-Month LIBOR Spread:
Monthly Data 1/77 to 7/99
Average Spread: 9.2 bps

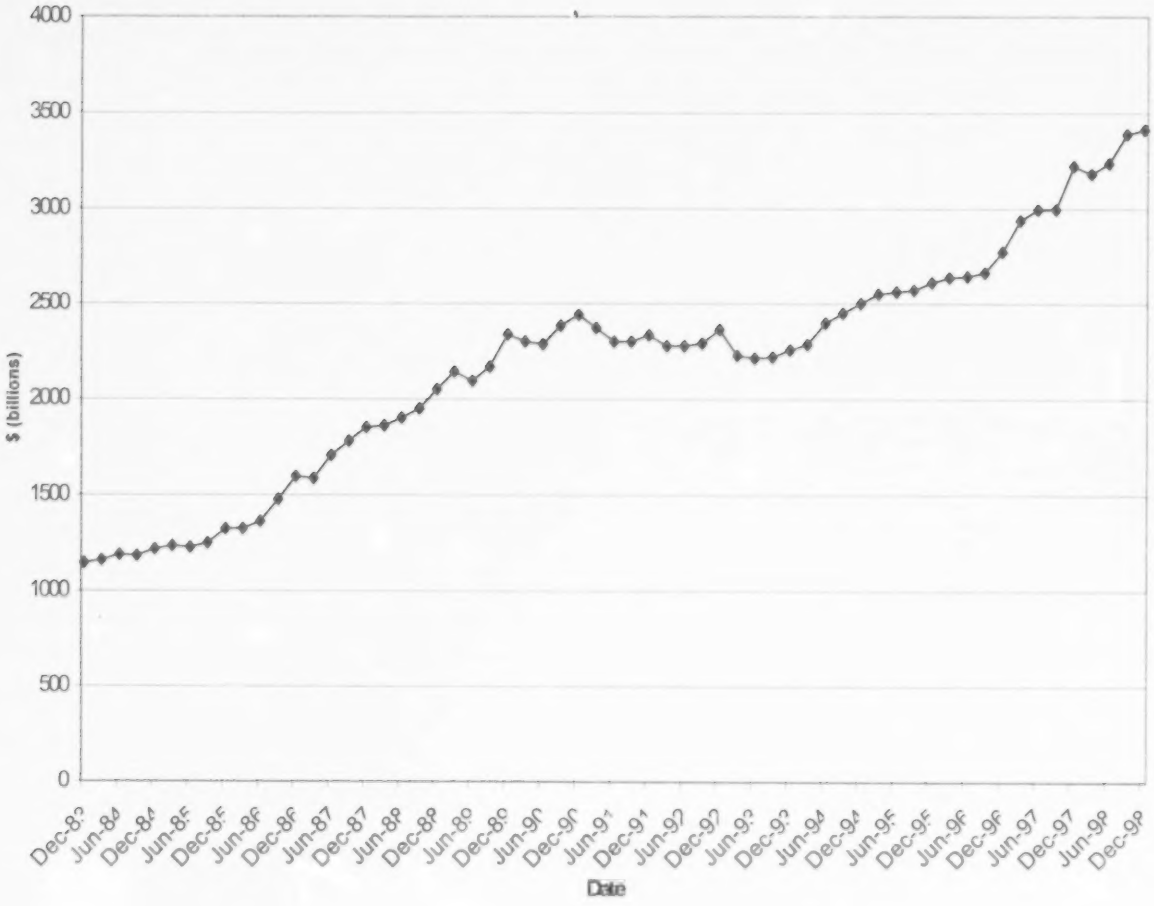


Source: U.S. Treasury Department

Outstanding Amounts

Data from the Bank of International Settlements (BIS) *Quarterly Review: International Banking and Financial Market Developments*, show cross-border dollar liability positions of all BIS reporting banks. These data include Eurodollars of all maturities, not just 3-month maturities. (See figure 3.6.) They give a total volume of $3.4 trillion in 1998, and an annual average growth rate of 5.9 percent over the preceding decade.

Figure 3.6: Dollar Liabilities from BIS Reporting Banks Quarterly Data, 12/83 - 12/98



Source: U.S. Treasury Department

30- and 90-Day Commercial Paper Market Liquidity

The commercial paper (CP) market is more similar to LIBOR than to T-bills. Like LIBOR, CP issuers have different credit ratings. Virtually all large issuers have ratings from credit rating agencies, however, so their standing is readily determined. Rates differ by credit rating. The larger and highly rated issuers place their paper directly with investors. Other issuers, particularly smaller ones, place their CP through dealers. The rates on commercial paper are collected by the Federal Reserve from the clearing house for virtually all CP transactions and largely reflect new issue rates. The rates are sorted by credit rating and yield curves are estimated to determine rates by maturity.[10] Rates for financial paper from highly rated issuers, and rates for highly rated and intermediate rated issues of nonfinancial paper, are posted by the Federal Reserve daily, so there is substantial rate transparency. However, because these rates are read from an estimated yield curve, the specific rates quoted for a specific maturity may not represent actual transactions.

Dealer-placed financial commercial paper accounts for 70 to 75 percent of total outstanding financial paper according Federal Reserve statistics, up from around 50 percent at the beginning of the decade. The dealer market is dominated by a handful of firms that control roughly 60 to 70 percent of the dealer-placed CP market.[11] Consequently, the behavior of specific dealers plays a key role in this market.

Investors in CP are also concentrated. They are predominately institutions (most often mutual fund --see figure 3.7) attracted by the higher yields available on CP than on T-Bills and they tend to be buy-and-hold investors, leading to low dollar volume of transactions in the secondary CP market once the initial distribution is accomplished.[12] Although offer rates are posted on some proprietary systems, the absence of widely available two-way pricing data and transaction volume data also indicates thin

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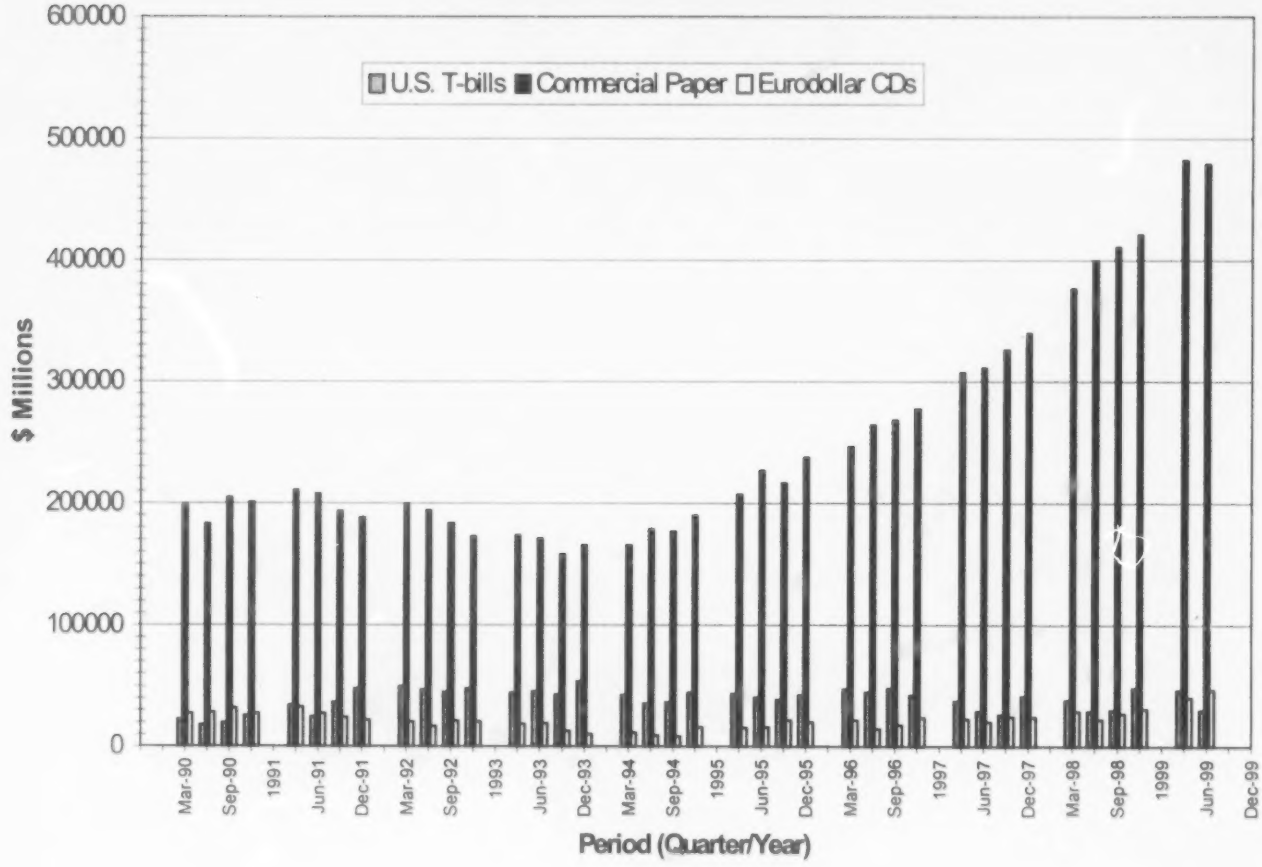
[10] There is a statistical break in series in the data for CP rates that occurs in September 1997, when the Federal Reserve first began to collect the data from the clearing house. Prior to that time the data had been collected, for financial commercial paper, from finance companies that directly placed their paper and, for other paper, from the dealers who distributed it. It has been thought that there is some discontinuity in the nonfinancial commercial paper rate series because of the change in the reporting source for the data. There does not appear to be such discontinuity for the financial paper, however, because the issuers who directly place the paper and the clearing house both have, and report, the same information. It is the financial paper that is relevant to CP as an index for FFELP lenders' returns.

[11] Merrill Lynch, Goldman Sachs, and Lehman.

[12] Fabozzi, Frank, *Handbook of Fixed Income Securities, 3rd Edition*, p.227.

Figure 3.7: Portfolio Holdings of Taxable Money Market Funds, 3/90 - 12/99



Source: U.S. Treasury Department

secondary market activity. One would expect that the non-homogeneity described above would have an adverse impact on CP liquidity. However, these effects appear to be somewhat mitigated by credit ratings for virtually all paper and other homogenizing features of the CP market, i.e. credit enhancements, regulations (which results in certain conforming characteristics in CP), and business practices.[13]

Furthermore, CP generally has short maturity – although maturities range up to 270 days, they average about 30 days according to the Federal Reserve (see appendix VI, which is the Federal Reserve's summary on its CP statistics). This short maturity, together with the virtually continual supply, augment liquidity of the market, serving some of the same functions as secondary trading.

Commercial Paper Bid-Ask Spread Information

Anecdotal information from traders in the CP market was obtained on bid-ask spreads.[14] Bid-ask spreads in the CP market have narrowed since 1987, when spreads averaged 12.5 basis points, to closer to 5 basis points.[15] The bid-ask spreads no longer exhibit differentiation related to credit tiering, but some sector tiering is still reported.[16] CP underwriters make the 5 basis point spread on CP sold to investors at initial offering. Should an investor seek to liquidate his position, the bid-ask spreads tend to be fairly tight (on the order of 2 basis points).

This tight spread appears to be related to prevailing business practices of issuers and dealers, practices designed to enhance distribution channels for new issues. Underwriters repeatedly sell new offerings to the same group of institutional investors. It is often in the interest of the underwriting firms to "keep these investors happy" by providing a tight bid-ask spread when the investor needs to liquidate a position. This creates good will between the investor and the underwriters and enhances the ability of the underwriter to place new product with a reliable buyer in the future.

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[13] Credit enhancements: All issuers of CP back their outstanding paper with bank lines of credit. The maximum maturity for commercial paper is 270 days because longer dated paper requires SEC registration, which is a costly and time consuming process. CP is often categorized according to registration exemptions sections found in the Securities Act of 1933. Most of the "plain vanilla" CP in the market is 3(a)3 commercial paper; this section exempts from registration any CP with a maturity of less than 9 months and used to finance "current transaction". The second class of CP is 3(a)2 paper, sometimes referred to as LOC (Letter of Credit) CP. Section 3(a)2 of the Securities Act of 1933 exempts any CP from registration that is "issued or guaranteed by a bank". Finally, there is section 4(2) CP or "private placement" CP, which can be only sold to "accredited investors" in order to be exempt and is negotiable only to other "accredited investors." Secondary-market trading activity in CP adheres to a long-practiced trading protocol whereby the CP investor must first obtain bids from the CP underwriter who originally sold the CP. If the investor rejects that bid, he is then free to go out and solicit other bids from other CP dealers.

[14] Telecon with traders at JP Morgan.

[15] Stigum, *op.cit.* p. 1051

[16] There is reported to be some sector tiering, with the finance CP treated more favorably in the secondary market than the industrial CP. Finance paper, according to the Federal Reserve statistics, is also a much larger portion of the CP market, accounting for about 80 percent of outstandings.

Outstanding Amount

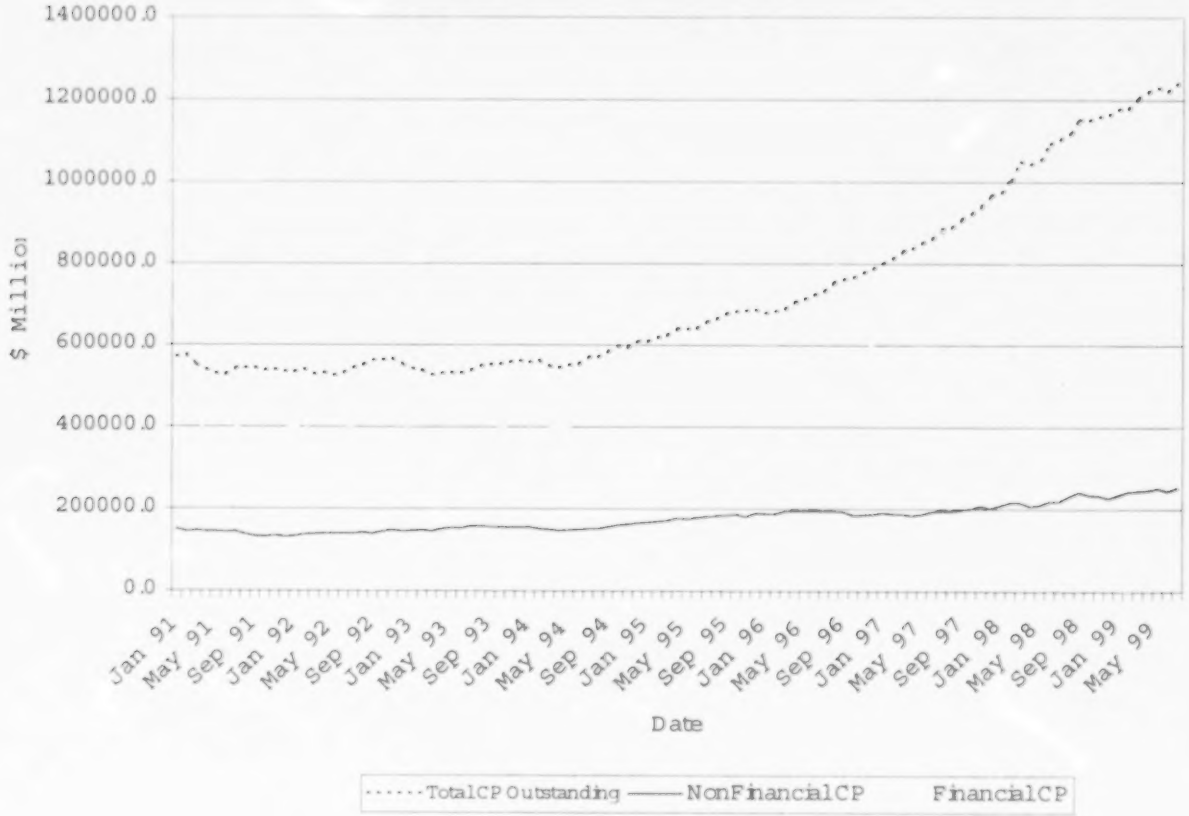
Data for the amount of CP outstanding are available from the Federal Reserve. (See figure 3.8.) This series is used as a proxy for the liquidity of both the 30- and 90-day CP market. The Federal Reserve does not release regular statistics on the average maturity of the CP outstanding. Conversations with Federal Reserve analysts, however, indicated that they estimate the average maturity of their CP outstanding time series to be in the 30- to 45-day range. The literature suggests that the average maturity of CP has been increasing somewhat as issuers become more sophisticated in evaluating interest rate risks, but the change has been incremental.[17]

Issuance Volume

Total monthly CP issuance for all CP can be estimated from the total outstandings data collected by the Federal Reserve if an assumption is made about the average maturity of CP in the index. Assuming that the average maturity is approximately 30 days, the implication is that each month, the entire amount of commercial paper outstanding rolls over. With such an assumption, the monthly issuance can be approximated by the monthly outstanding amount. Estimates of issuance volume were done assuming both a 30-day average maturity and a 45-day average maturity. (See figure 3.9.) These two estimates can be viewed as the upper and lower bounds of a range of issuance volume.

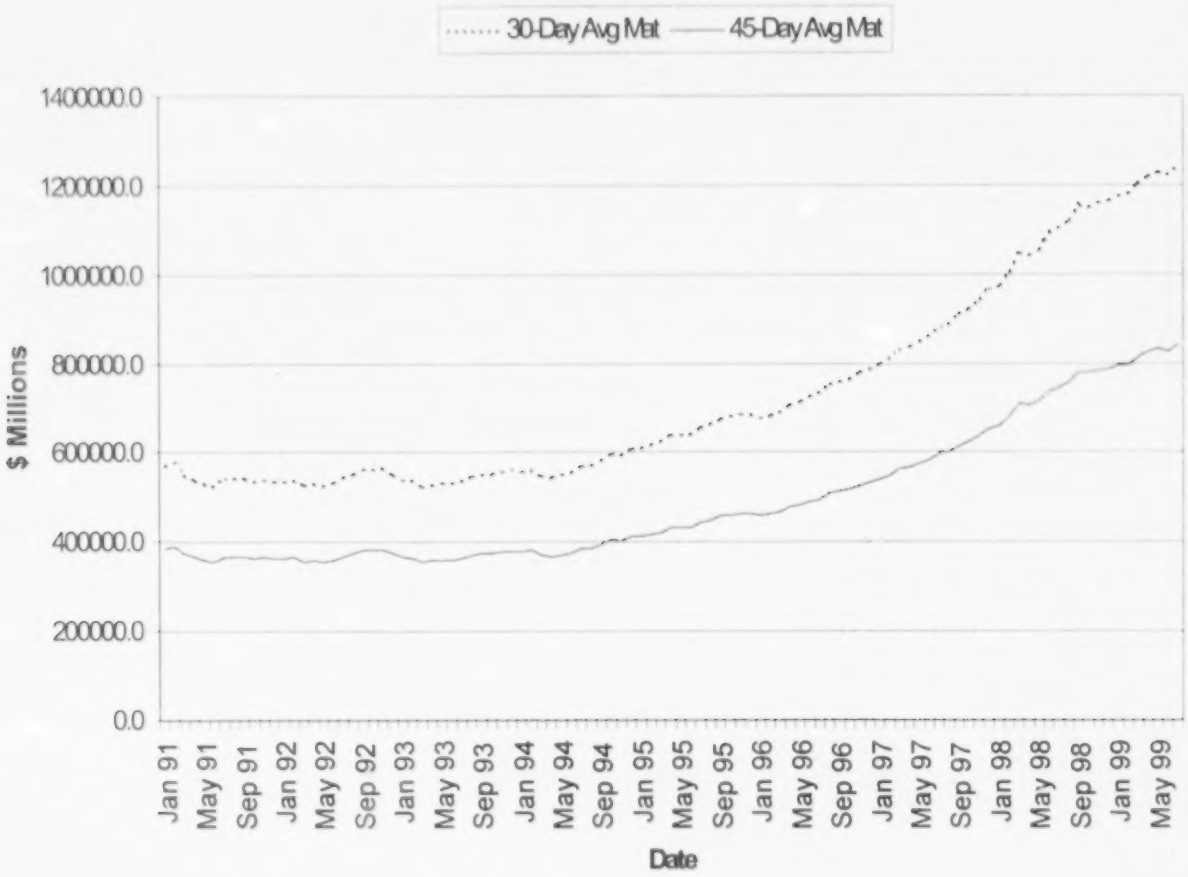
[17] Stigum, *op.cit.* p. 1050.

Figure 3.8: Commercial Paper Outstanding
Monthly Data 1/91 to 7/99



Source: U.S. Treasury Department

Figure 3.9: Monthly CP Issuance Assuming Various Average Maturities Jan 91 to Jul 99



Source: U.S. Treasury Department

Liquidity Patterns Over Time

Detailed analysis of liquidity patterns over time is made difficult by lack of comparable liquidity time-series data for consistent time periods for all three alternative indexes and by the fact that some information is anecdotal rather than quantitative and some measures are proxies. Sometimes inferential and direct liquidity measures diverge, highlighting both differences between the primary and secondary markets for these instruments and the need for caution in accepting inferential liquidity measures prima facie.

Table 3.1 summarizes the trends seen in the available liquidity data, from the date that the respective data is available to present.

Table 3.1
Measures of Liquidity

Measure	3-Month T-bill	3-Month LIBOR	1- & 3-Month CP
Bid-Ask Spreads (Direct Measure)	Static @ 2 bps to Oct. 1998 has narrowed to 1.3 bps.	Highly volatile to 1977; static at 9.2 bps to present	Narrowed from 12.5 bps in late 80s to 2 bps currently
Secondary Market Trading Volume (Direct Measure)	Federal Reserve data show dealer transactions for all bills peaked in 1996	Not Available	Not Available
Total Amounts Outstanding (Inferential Measure)	Total outstandings privately held rose between 1990 and 1996, then trended down toward the current level	BIS statistics show overall market has tripled since 1983	Federal Reserve Statistic show outstandings have doubled since 1994
Issue Amounts (Inferential Measure)	Amounts issued to private holders rose between 1990 and 1996 and declined from 1996 to present	Not Available	Flat until 1994- doubled since 1994
Price Transparency (Qualitative)	High—Real-time, two-way pricing, trade size and transaction volume data	Some-bid-ask data-No transaction volume data.	Very little -- offer rates are posted, no transaction volume
Market Makers (Qualitative)	30 primary dealers; other institutions active in the market	16 contributor banks in BBA LIBOR Fixing	3 major dealers control 60 to 70 percent of market; some large direct issuers
Homogeneity (Qualitative)	Homogeneous; Single issuer, top credit quality "a T-bill is a T-bill"	Less homogeneous than T-bills; variety of credit qualities, sovereign risks	Least homogeneous, credit qualities, various issuers, various sectors; offset by credit enhancements

Source: U.S. Treasury Department

The discussion that follows analyzes trends and/or patterns in the liquidity measures for each of the three alternative indexes.

3-Month T-Bill Liquidity Pattern

The data show that for 3-month T-bills, while issue volume and amounts outstanding increased from 1990 to 1996, bid-ask spreads remained steady. Secondary market trading volume for 3- month bills, for which the transactions data for all bills served as a proxy, was flat from 1988 until 1992 and then increased by 60 percent from 1992 to 1996.

After peaking in 1996, trading volume declined and is currently at levels seen in the late 1980s and early 1990s. New issue and outstanding amounts fell from September 1996, through the end of FY1998, reflecting a reduction in government deficits and, more recently, the emergence of surpluses. According to Treasury officials, these quantity measures may be stabilizing at a new lower level as debt management policy has moved to augment the volume of weekly bill issuance relative to year-bills, notes, and bonds.

Bid-ask spreads on 3-month T-bill began to tighten in October 1998. Financial market turmoil erupted in Asia and Russia, causing capital to flow into Treasury securities. A "flight to quality" associated with financial market turmoil would be expected to have an impact on bill rate levels and may influence bill liquidity if the capital flows lead to a scarcity premium.

3-Month LIBOR Liquidity Pattern

Eurodollar time deposits (BID/LIBOR) spreads demonstrate the maturing of this market by the mid-1980s. Spreads for 3-month maturities exhibited tremendous volatility in the early 1970s, corresponding to poor liquidity due to the nascent state of the Eurodollar market and failures in 1974 of banks with Euromarket exposure, most notably the Bankhaus I. D. Herstatt and Franklin National Bank. Volatility in the bid-ask spread waned in the late 1970s and early 1980's as the Eurodollar market grew and matured, and since the early 1980s, the 3-month Eurodollar bid-ask spread has been fairly static. Over much of this time period, the total (all maturities) Eurodollar deposit market has grown dramatically, nearly tripling in size since 1983 according to BIS data. The growth in outstandings of this market mirrored the growth in economic activity in the United States.

The data suggest that the correlation between Eurodollar bid-ask spreads and Eurodollar volume measures is weak, as was also the case for T-bills. The bid-ask spread has been stable while outstandings have increased steadily since 1983.

1- & 3-Month CP Liquidity Pattern

In the commercial paper market, bid-ask spreads have tightened from 1/8 percent, or 12.5 basis points to about 2 basis points, since 1987 according to anecdotal information from CP traders and financial literature. Meanwhile, outstanding amounts and new issue amounts have doubled since 1994, after remaining flat for the first part of the 1990s. The greater volume largely reflects a growing economy as well as the trend toward more security market financing and less dependence by businesses on banks.

The trends in CP liquidity measures are consistent, a pattern that would be expected in a market becoming increasingly deep and liquid. However, caution is required in interpreting the liquidity measures of the CP markets because of the major role of a few market makers who adhere to a long-standing protocol on buying and selling. (See discussion above.)

The narrowing of the bid-ask spreads in the CP market over recent years appears to reflect a strategy of CP underwriters to enhance distribution channels for CP in the initial placements market. Since most CP investors are buy-and-hold investors and continuously buy new CP, underwriters are willing to provide liquidity to "their" customers when, on occasion, the customers/investors need it. Thus, CP liquidity is an "administered" feature of the primary market rather than representing a deep, active, and competitive secondary market.

LIQUIDITY LOOKING FORWARD: IS THE PAST PROLOGUE?

The advances in information technology, electronic trading, and expanded trading hours would seem to enhance liquidity in most of these markets. Furthermore, the increased sophistication of financial market participants can be expected to bring these markets closer to each other in characteristics because, as noted above, issuers in each market are competing for largely similar investors.

Expected Reactions of Direct and Inferential Liquidity Measures to Changes in Government Surpluses.

The members of the Study Group did not reach consensus on the likely evolution of liquidity for alternative money market instruments in the event of accumulating federal government surpluses. On the one hand, liquidity is important to Treasury debt management because a liquid Treasury market is efficient, and an efficient market ultimately lowers the Treasury's financing costs. The liquidity of the T-bill market is especially important because T-bills are a major cash management tool with high auction frequency that permits debt managers to adjust financing to meet concurrent cash balance objectives. Consequently, Treasury debt management is committed to maintaining a deep and liquid T-bill market.

Treasury officials cited recent debt management actions in the face of surplus budgets highlight Treasury's commitment to maintaining market liquidity. They noted that the Treasury has changed auction sizes and frequencies, and eliminated certain longer-term notes. The net effect will be to increase the size of bill auctions, even as issuance of other securities declines. Treasury also has developed a program for buying back outstanding securities. Treasury sees buy-backs as a tool for lowering interest costs by concentrating outstanding debt among fewer issues, while enlarging the size and enhancing the liquidity of new Treasury issues. (See appendix XV, which presents Treasury Under Secretary Gensler's comments at the time of the February 2000 refunding.)

If surpluses were to unfold as currently projected, the future supply of bills and future transaction volumes would decline from current levels. Treasury analysts note, however, that the bid-ask spread in this highly developed market has been shown to be fairly insensitive to changes in outstandings and trading volumes. There have been a number of changes in issue amounts and amounts outstanding over the last 10 years, as deficits have expanded and declined, without any resultant changes in bid-ask spreads. Treasury analysts, therefore, find it premature to draw conclusions about the response of T-bill liquidity to trends in T-bill volume that will take a considerable time to penetrate boundaries of past experience.

FFELP financial community members of the study group noted that a GAO report [18] suggested that challenges to debt management will become more demanding as currently projected budget surpluses actually accumulate and that there had been several instances in the past few years where unexpected surpluses in the Federal budget has adversely affected the liquidity of the short-term T-bill market. According to Treasury officials, significant consequences could be some distance away. Further, some analysts, including FFELP Community members, see liquidity problems emerging and only getting worse in the T-bill market. (See appendix XIV for a statement of the lenders' position.)

There should not be any direct impact on either direct or inferential liquidity measures for Eurodollar time deposits and CP liquidity measures in response to changes in the Federal government surplus. Historical trends in the growth of these markets suggest continued growth in as the economy expands.

How bid-ask spreads would react to increased activity in these markets is a matter of conjecture. It would largely be contingent on the reaction of Eurodollar and CP market makers to increased activity. Since CP secondary market activity is very light, and the practices and protocols in the secondary CP market are long-standing, with bid-ask spreads being effectively administered by the market makers, the essential question is whether market making will continue to expand in pace with economic activity. The

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[18] General Accounting Office, "Federal Debt Management in a Period of Budget Surpluses" September 1999 (GAO/AIMD-00-270, p. 5)

availability of market-making capacity will be important in accommodating the increasing number of smaller issuers who use dealers to place their paper. If that capacity were not to respond effectively, then interest rates in this market could become increasingly sensitive to short-term fluctuations in supply. However, conclusions on this subject are only speculative – and are independent of federal budget developments.

CHAPTER 4: HOW LENDERS HAVE MANAGED INTEREST RATE RISK

This chapter discusses FFELP lenders' basis risk, which was embedded in the program prior to the recent formula change to a commercial paper reference rate. Basis risk existed because the lenders' spread (lenders' yield minus lenders' borrowing costs) was volatile. The yield was tied to a T-bill-based formula while the borrowing costs were often tied to commercial interest rates that did not necessarily move in tandem. It also reflects movements in borrowing margins, which vary with credit risk, and in hedging costs, which vary with basis risk. Thus, a simple comparison of 91-day Treasury bill rates and commercial interest rates will not necessarily explain movements in any particular lender's spread. This chapter describes program features and lender strategies that prevailed before the January 1, 2000 change in the reference rate and provides an analytical framework for answering questions 4, 5 and 6 in the congressional mandate for this study.

Lenders and others involved in the financing of student loans have expressed concerns about the basis risk in student lending for a considerable time. In early 1998, as the Higher Education Act was in the process of being reauthorized, the lending industry advocated a switch of the reference rate to the commercial paper based yield.

The 1998-99 experience illustrated the effects of basis risk under adverse interest rate conditions. A few lenders hedged their risks, which meant they paid a fee for someone else to bear the risks created by movements in the T-bill rate and the rates they pay to fund their operations. Such hedging limited risks while at the same time lowering expected returns for lenders. However, lenders told us that their ability to hedge risks was limited in some situations, because no one was willing to accept a fee to bear the risks or required fees so high the lenders were unwilling to pay someone else to bear the risks. As a result, the lenders bore all the risks themselves.

Private lenders and secondary market officials, whom we surveyed or spoke to, generally preferred a yield formula based on commercial rates such as LIBOR or commercial paper. Furthermore, lenders in the study group proposed a new reference rate and markup up for lenders' yields based on commercial paper. (See appendices VIII and IX for summaries of interviews and surveys of lenders.)

LENDERS' YIELDS USUALLY MOVE IN TANDEM WITH T-BILL RATES

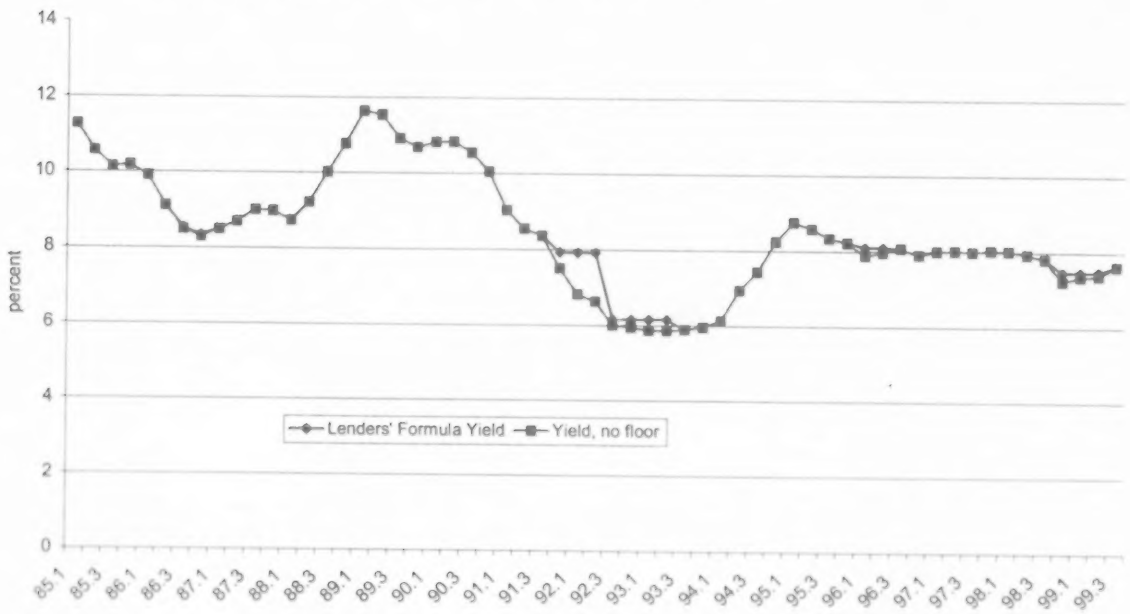
Before the recent change to a commercial paper based index, the maximum rate that lenders could earn on most FFELP loans—their formula gross yield – generally

tracked quarterly movements in T-bill yields.[1] The formula yield would not necessarily track the Treasury reference rate exactly. The lenders' yield resets quarterly during the year, but the borrowers' rate is reset annually on July 1 and is a floor on the rate earned by lenders. Under the 1998 formula, discussed in detail in chapter 1, the lenders' yield would rise if the Treasury bill reference rate rose during the year but could fall only to the rate paid by students, which is set at the beginning of the year.

A hypothetical history of lender gross yields is shown in figure 4.1. In this figure the formula yield is calculated as it would have been if the 1998-99 formula had been in place since 1985. The figure shows that the floor would have affected lenders' gross yields in three periods: early 1990, late 1996 and after the Russian loan default and financial disruptions in 1998. A total of 11 out of 58 quarters would have been affected.

[1] Actual gross yields could fall short of the formula yield to the extent that lenders absorbed fees or provided discounts to students that were often tied to a borrower's repayment performance. The Study Group did not obtain or evaluate data on discounting or fee absorption.

FIGURE 4.1: LENDERS' FORMULA YIELD
and YIELD WITH NO FLOOR
(hypothetical returns under the 1998-99 T-Bill based formula, both series in percent)



Source: federal statistics and calcuated values

LENDERS' INTEREST EXPENSES ARE RELATED TO BUT DO NOT MOVE IN TANDEM WITH THEIR MARKET REFERENCE RATES

Interest expenses for lenders have not always moved in tandem with their gross formula yield or quoted commercial rates. Each lender borrows at a rate that reflects market rates, its credit risk, and financing terms, including any costs to hedge risk. Often a lender's borrowing rate is quoted as the sum of a market reference rate and borrowing margin. This margin can be affected by the term to maturity of the loan, exact financing terms and options in the contract, and the creditworthiness of the lender. Sallie Mae also pays a special offset fee when it buys loans and holds them on the books of its government-sponsored enterprise, which affects its spread.[2] The lenders' borrowing margin can vary across time as well as across lenders, as economic conditions change.

Traditionally, nonprofit secondary markets, including state-designated secondary markets and other state chartered not-for-profit secondary markets, funded themselves with a mix of tax-exempt[3] and taxable debt issues. According to several industry observers, Congress has limited the amount of tax-exempt authority or states have shifted tax exempt authority to other activities. In addition, the relative importance of tax-exempt funding for secondary markets has declined.

Tax-exempt funding may also create volatility between changes in lenders' costs of funds and movements in the commonly quoted reference rates such as CP or LIBOR. Tax-exempt yields are almost always lower than rates on taxable instruments and they tend to be somewhat more volatile than other money market rates on a month-to-month basis. They have the same contours, however, across business and interest rate cycles.[4]

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[2] Sallie Mae pays the government a 30 bp offset fee on loans held in portfolio, effectively an increase in borrowing costs, when it borrows money to finance these loans under its GSE operations. Under terms of its privatization, Sallie Mae is required to wind down its GSE operations by 2008. After winding down the GSE operation the 30 basis point fee will be eliminated, but Sallie Mae will be paying more for its non-GSE debt.

[3] In 1980, in a double-digit interest-rate environment, the special allowance for FFELP loans funded with tax-exempt obligations was reduced to one-half the special allowance paid on loans funded with taxable obligations, subject to a floor of 9.5 percent. In the low interest rate environment of the early 1990s, this special treatment for tax-exempt funding was repealed, but the repeal did not apply to obligations "originally issued" before the effective date. This "grandfather" clause has been interpreted to permit serial refinancings of then-outstanding tax-exempt obligations to qualify for the floor of 9.5 percent.

[4] Available data on frequently resetting tax-exempt rates suggest that they are slightly more strongly correlated with LIBOR than with T-bill rates, but the difference is not significant.

Most FFELP Lenders Fund Operations At Variable Commercial Money Market Rates

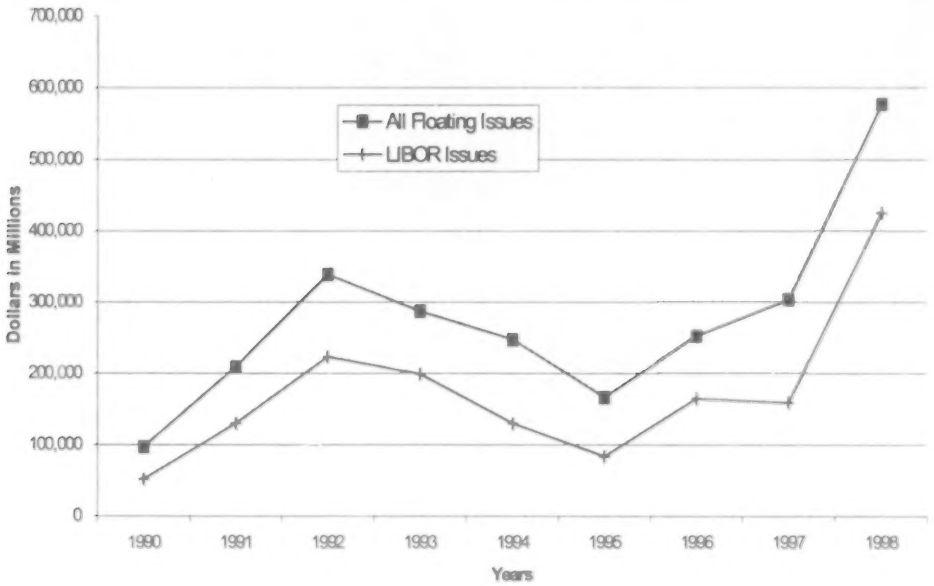
The use of variable rate financing has been increasing and this financing has been increasingly based on or set with reference to commercial money market rates such as LIBOR or commercial paper.[5] Most for-profit lenders borrow on the basis of commercial rates and ABS (asset-backed securities) issued for student loans are usually tied to LIBOR or auction rates, which move with LIBOR rates. Some issues are tied to T-bill rates. However, when given a clear choice in recent Sallie Mae offerings, investors seemed to prefer LIBOR-based variable rate investments. Figure 4.2 illustrates the extent to which LIBOR, not commercial paper, is the basis for current variable rate funding for all securities (both short- and long-term) in U.S. markets.

Credit Risk and Term to Maturity Affect Borrowing Margins Paid by Lenders

Lenders may fund using financial instruments with different terms to maturity. Even if all funding interest rates adjust quarterly, the term of the funding instrument may affect the margin over the reference rate. The borrowing margin over the LIBOR or CP rate for a one-quarter instrument can be lower than the margin over LIBOR or CP for an instrument maturing in 5 years with quarterly adjustments. Such differences in margins can be observed in ABS funding by Sallie Mae, in which longer term securities pay larger margins than shorter term securities over the same reference index rate.

[5] Commercial rates such as LIBOR or commercial paper are used because added funding can not be obtained easily from small deposit funding sources. To raise funds, lenders may enter several markets, such as transaction deposits, large negotiable CDs, and very short-term sources such as federal funds and repurchase agreements, as well as a variety of notes and certificates whose rates may be expected to move with LIBOR or commercial rates generally.

Figure 4:2 LIBOR Dominates Floating Rate Debt Issued for All Purposes



Source: Sallie Mae and Securities Data Corporation

Large Lenders and Small Lenders Have Different Sources of Funds and Sensitivity to Changes in Market Interest Rates

Large and small banks have different sources of funds and sensitivity to changes in market wide interest rates, as shown in table 4.1.[6] In addition. nonbank holders of student loans fund differently than banks. Although the proportion of interest-bearing liabilities that fund operations at all banks are roughly similar, the mix of interest bearing liabilities differ. For example, the largest 10 commercial banks have over 20 percent of their deposits in foreign offices, compared to less than 0.1 percent for the smallest banks. Rates on foreign deposits likely varied very closely with LIBOR (probably about 12 basis points lower). Federal funds purchases and repos range from nearly 10 percent at the largest 10 banks to less than 2 percent at the smaller banks, and rates for such funding vary with market wide conditions. In contrast, small denomination deposits vary from about 6 percent of assets at the largest 10 banks to over 30 percent of assets at the smaller banks. Rates on small time deposits are lower and considerably less volatile than LIBOR or T-bill rates, tending to follow money market rates with some lag and damping fluctuations. Large time deposits range from less than 5 percent at the largest banks to 11 percent at the smaller banks. However, interest rates on large time deposits (likely negotiable certificates of deposit) move very closely with other money market rates. Since 1985, they have averaged about 25 basis points less than LIBOR (3-month maturity in each case) and have been slightly less volatile. In addition, some small banks that offer student loans under FFELP have specific sources of funds tied directly to student lending. For example, in student lending, an institution might use an advance from another institution. This advance would be used to originate the loan, and the student loan would be used to secure the advance. Historically, Sallie Mae has provided such advances to other FFELP lenders.[7] In general, funding sources at larger banks tend to be from international sources and active markets such, as federal funds and repos, while smaller banks have funding sources that are less volatile or less tightly tied to market conditions.

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[6] "Profits and Balance Sheet Developments at US Commercial Banks in 1998," Federal Reserve Bulletin, June 1999, pp.369-395.

[7] Lenders also use repos to fund student lending. A repo (repurchase agreement) is the sale of an asset at a given price to another party with an agreement or obligation to repurchase that asset at some later date at a higher price. The differences in sales prices and purchase price is the interest paid for the use of the other institution's funds. The sale and repurchase is similar to a fully collateralized loan. If the lender does not repurchase the asset, it stays with the lender as if it were collateral on a loan.

Table 4.1: Funding Sources for Commercial Banks

By Asset Size Class
(% of assets)

	Largest 10 banks	Banks ranked 11-100	Banks ranked 101-1000	Banks ranked over 1000
Liabilities	92.67%	91.63%	90.54%	89.53%
Interest Bearing Liabilities	65.81	73.46	75.44	75.35
Deposits	47.65	51.52	62.45	71.76
In Foreign Offices	20.17	8.16	1.29	0.07
In Domestic Offices	27.48	43.36	61.16	71.70
Other, Checkable Deposits	0.99	1.75	4.24	11.17
Savings	15.84	21.42	25.66	19.01
Small Denomination Time	6.03	12.83	21.25	30.42
Large Denomination Time	4.62	7.36	10.01	11.10
Gross Federal Funds purchased	9.79	9.48	6.16	1.50
Other	8.37	12.46	6.83	2.09
Non-interest Bearing Liabilities	26.37	18.17	15.10	14.18
Demand deposits in domestic offices	8.46	12.41	11.89	13.08
Revaluation Losses on OBS items	7.66	0.76	0.01	0
Other	10.64	5.01	3.20	1.10
Miscellaneous Capital Accounts	7.33	8.37	9.46	10.47

Source: Federal Reserve Board

Large and specialized FFELP lenders are even more sensitive to changes in market rates than are banks because they do not have a deposit base. Among the largest holders of FFELP loans -- Sallie Mae and the large banks or specialized bank subsidiaries -- a range of financing options is available such as T-bill, LIBOR, and commercial paper securities for both long and short-funding. Large diversified banks and other holders of student loans may also raise funds in the floating rate notes markets, typically with maturities of one to three years. Sallie Mae in its government sponsored enterprise operations, which must be wound down by the end of 2008, raises funds with floating rate notes indexed to Treasuries.

Large diversified banks and financial holding companies easily issue floating rate notes, which are frequently placed with investors. These investors include insurance companies and pension funds, which desire at least some investments with returns based on short-term rates which are higher than Treasury bill yields. Rates on these notes do not depend only on the market reference rate to which they are tied. The rate also depends on the credit rating of the issuer, the exact maturity of the note and financial market conditions when the note is issued. Hence the cost of this funding is subject to money market volatility but its availability tends to be more reliable than long-term funding for securitizations.

Basis-Risk, Hedging, and Expected Returns

If lenders' yields move with T-bill rates while much of their interest expense moves with commercial rates, they face basis risk. This risk exists because commercial rates, including their borrowing margins, are not perfectly correlated with T-bill rates, which creates volatility in the interest rate spread earned by lenders.

Swaps[8] are a mechanism for hedging this risk that can be used by lenders to ensure that interest income and interest expenses both move with the same market interest rate. The swap eliminates some or all of the basis risk. In a swap, one party receives payments based on one interest rate and pays the other party based on another interest rate. In effect, a swap permits a lender to change the interest rate on his expenses or revenues from the underlying business. A lender, using a swap, earns a lower expected and less volatile interest spread. If hedging or swap costs

[8] A interest rate swap contract is one in which two parties exchange (swap) interest rate payments based on a notional value for the principal for the term of the contract. In a basis swap, both parties pay a variable rate referenced to a market rate, such as T-bill, LIBOR or CP. One party pays based on one rate while the other part y pays based on the alternative rate. In student lending the T-bill payer has paid T-bill plus a margin and typically received in exchange a LIBOR or CP. The margin over T-bill reflects the spread between T-bills and the other rate as well as the risks of movements in the spread over the life of the swap contract. In contrast, a simple swap involves one party paying based on a variable rate, while the other pays a fixed rate. A basis swap can be viewed as two simple swaps tied together. One exchanges a variable T-bill rate for a fixed rate, and the other exchanges a fixed rate for a variable LIBOR rate.

increase significantly in comparison to the spread and its volatility, the value of hedging to the lender may decline to the point where the lender may hedge less or even not at all.

If swap dealers providing hedges anticipate higher spreads or greater spread volatility in the future, the price they would charge for hedging would increase to ensure that they can provide the hedge and still earn a profit. If spreads are increasing and the future spread volatility is unpredictable, swap dealers may abandon the market, charge high rates, or limit the amount they would hedge, which would make the market less liquid and limit the ability of FFELP lenders to hedge their basis risk.

Table 4.2 illustrates how a swap affects expected spreads for a simple lender, earning a yield based on T-bill rates and paying interest based on a commercial rate (CR). The spread for a lender who is not hedging depends on the T-bill rate, the markup (280 BP), the commercial rate, and its borrowing margin. Because the lender has not hedged, it could experience, in the future, a decline or increase in its spread.[9] If the borrowing margin increases due to general concerns about credit quality, the spread is further squeezed.

Assuming the lender hedges with a swap, the spread for the hedged lender depends on the markup (280 BP), borrowing margin, and swap spread. (Other hedging mechanisms are available.) As the borrowing margin and swap spread increase, the hedged lender's locked-in spread decreases, but the hedged lender's spread on the loans is not affected by movements in the underlying T-bill and commercial rates after the hedge is in place. Swap spreads and borrowing margins can vary over time. If the original hedge by the lender is not for the full term and amount of the student loans, the hedged spread can change over time. The costs of replacing a hedge can vary as aggregate interest spreads and swap spreads vary with market conditions, and as lender and counterparty evaluate the probability of increased basis risks in the future and each other's creditworthiness. In addition, swaps for the right amount or for the right term to maturity, which matches the life of the underlying asset may be unavailable or be considered inordinately expensive by lenders at certain times. In addition, the borrowing margin for credit risk can vary over the life of the student loan assets as market conditions and the lender's own financial condition change.

[9] The statutory formula yield includes a floor rate during each year. In theory, this floor rate protects the lenders against large downward movements in interest rates. In practice, the floor in the current T-bill based formula has been invoked slightly less than 20% of the time since 1985.

Table4.2:
An Example of a Lender's Interest Spread With and Without Hedging

	Without Hedging	With Hedging
Lender Yield	T-bill + 280 BP	T-bill + 280 BP
Lender Interest Expenses	Commercial Rate(CR) + Borrowing Margin(BM)	CR+ BM
Gross interest Spread	(T-bill + 280 BP) - (CR+ BM)	(T-bill + 280 BP) - (CR + BM)
Hedging Flows		+ CR - (T-bill + swap spread (SS))
Net Interest Spread	(T-bill + 280 BP) - (CR + BM)	(T-bill + 280 BP) - (CR + BM) + [+ CR – (T-bill + SS)] = 280 BP - (BM +SS)

Source: Calculated

Hedging Costs Vary Over Time and Lenders

Lenders told us that swap spreads can be higher or lower than the cash or spot market interest rate spread at any given time.[10] Lenders also noted that the short-term cash interest rate spread is based on current conditions, while swap spreads also depend on anticipated future rates and their volatility. When future spreads are expected to be volatile, swap spreads tend to be higher than when less volatility in the spread is expected. In general, swap spreads tend to stay above cash market spreads except during sudden upward movements of cash market rates. Swap spreads can be below cash spreads if the market participants assume the upward movement in the cash spread is temporary. However, if the market thinks the upward movement will be sustained in the long term, the swap spreads will also turn up.

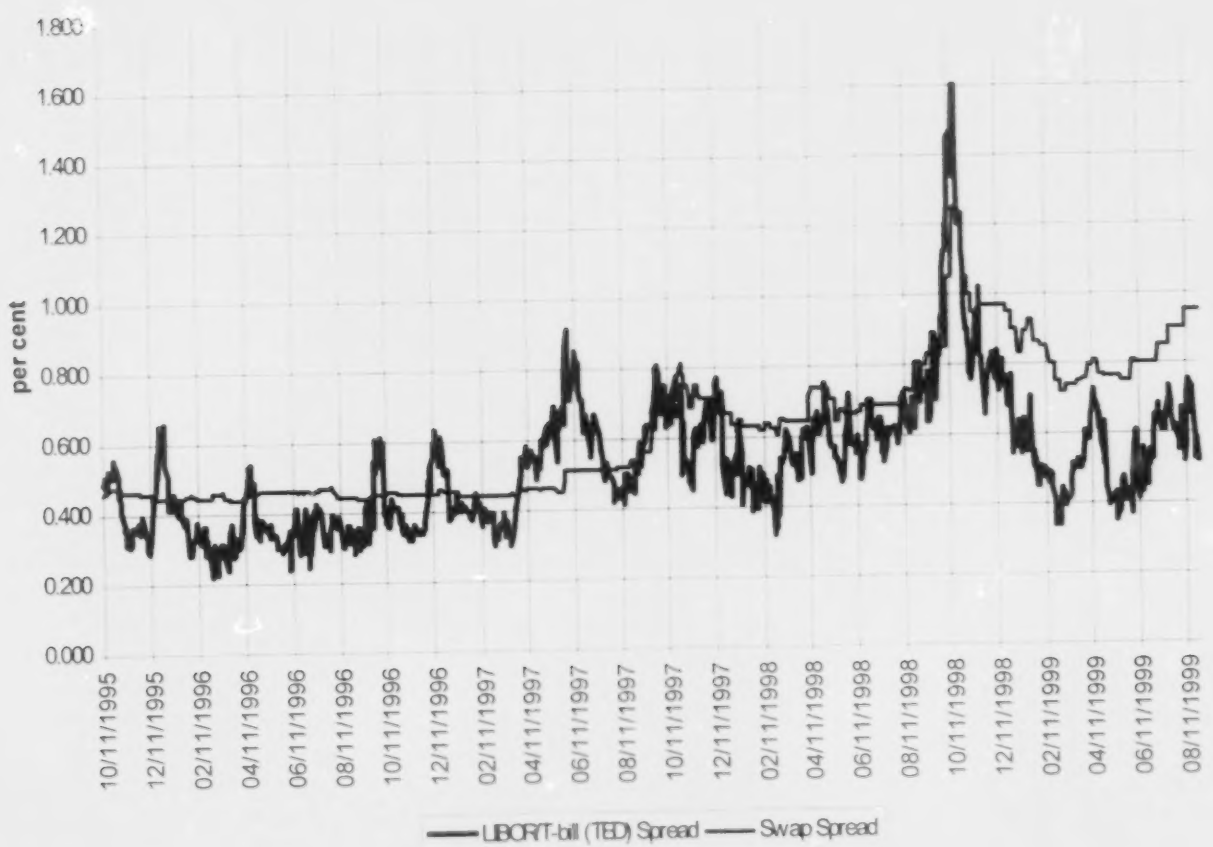
The relationships among swap spreads, interest rates, and interest rate spreads can vary over time. Swap contracts to hedge basis risk can be for varying terms to maturity. For example, a T-bill/LIBOR swap can be for 1, 2, 5 or more years, and costs can vary across terms of the contract. These differences in movements of the various rates that affect lenders' decisions on hedging were discussed in chapters 2 and 3. Figure 4.3 shows that actual swap spreads have, at times, been above and

[10] The cash or spot market spread is the difference between two interest rates on simple contracts that are settled immediately but may extend for years, e.g., the spread between the T-bill and CP rates or between the 10-year Treasury and a corporate bond rate. In contrast, a basis swap spread would be the add-on to the T-bill rate in the future in order to receive another rate such as LIBOR on a contract that could last 10 years. As LIBOR and T-bill rates vary in the future, so will realized spread between the T-bill based payment and the payment based on the other rate.

below the cash T-bill/LIBOR (TED) spread[11] for a 5-year basis swap contract. (Similar figures could be generated for other swaps contract terms.) However, after the Russia Default in 1998, swap spreads have increased and until late 1999 stayed above the TED spread, increasing hedging costs.

[11] The TED spread is the rate on Treasury issues minus the rate on LIBOR deposits for the same term to maturity.

Figure 4.3:
Movements in the Cash T-bill/LIBOR (TED) Spread And 5 year Swap Spread
1995 - 1999



Source: PaineWebber

Hedging Is Complicated Due To Prepayment Risk on Student Loans

Officials representing lenders, investment banks, and credit rating agencies emphasized that hedging with swaps for a portfolio of student loans is complicated by the fact that the remaining balance on a portfolio is not retired on a fixed schedule, such as a normal set of bullet bonds, which pay interest during their life and repay the full principal in the last payment. In contrast, for student loans, payments do not occur on a fixed schedule.[12] If the student borrower returns to school, repayment can be deferred, or the borrower can prepay the loan as it seasons and as the borrower's income increases.

The amortization problem is most severe for hedges related to pools of student loans that underlie student loan asset backed securities because, in that case, the hedge applies to a specific group of assets and prepayment could require unwinding if prepayment assumptions built into the hedge prove wrong. The problem is less severe for ongoing concerns with a portfolio of student loans that rolls over because, in that case, prepayments may simply be reinvested in new loans. Nevertheless, uneven cash flows create some complications in risk management for all firms.

Swaps can be made on a balance-protected or a balance-guaranteed basis. Balance-guaranteed swaps recompute the remaining balance each period, based on actual payments and prepayments. Balance-protected swaps include an agreed-upon schedule in advance of the deal as to how the remaining balance will decline over the lifetime of the deal. Such protection increases the cost of the hedge.

Diversified Lenders May Not Hedge Basis Risk in Student Lending

Some for-profit lenders fund themselves as stand-alone entities, but most we talked to are funded through a central corporate treasury. When funded through a central treasury, some student lending activity operations are charged the same rate that is charged to other lines of business in the diversified firm, while others are charged a rate adjusted for the risk, term, and other characteristics of the student loan product. The rate charged to student lending operations by the corporate treasury may not reflect fully the near zero credit risk for student loans, since some average cost of funding loans is charged to all lending units in the corporation. In addition, if an average rate is charged to student lending it may not reflect the basis risk inherent in student lending, since any hedging of basis risk tends to be done on a corporate-wide level. Since basis risk in different parts of a large diversified lender may differ in different ways, corporate-wide hedging may not be able to hedge the basis risk in student loans. In addition, the corporation, in general, may not measure or manage basis risk.

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[12] Other loans, such as mortgages, car loans or credit card balance, also introduce prepayment risks for lenders since they do not occur on a fixed schedule.

Hedging Instruments Are Not Always Available for Lenders Offering Student Loans Indexed to T-bills

In practice, the LIBOR/T-bill basis swap market may be too small and illiquid to permit investors or FFELP lenders to hedge basis risk at a reasonable cost. The basis swap market may be too small and illiquid between T-bills and commercial rates, especially for long-term contracts, because there appear to be few counterparties for the swap desired by lenders. Few institutions have liabilities that move sufficiently closely with treasury rates to make them natural counterparties. For example, everyone knows when Sallie Mae, an active user of swaps to hedge financings not issued directly in T-bill indexed securities, enters the market, and this entry affects the swap rate. Most FFELP lenders, as do most other lenders, fund in commercial rates, such as LIBOR or commercial paper.

During the summer of 1999, industry members mentioned that the spot difference between the T-bill and LIBOR had come back down since late 1998 but that swap spreads remained relatively high as the market remembered what happened in the fall of 1998. One investment firm official said that the T-bill swap with LIBOR historically was liquid in the 1-year to 10-year term, although other lenders, noted above, did not agree. However, since the October 1998 flight to quality, the market for this swap has been very illiquid and "gappy," which has increased the costs of swapping out of T-bills into LIBOR. Since the fall of 1998 swaps had been difficult to arrange, especially at the volume needed to offset student loan holdings. Such problems have happened periodically, we were told, and are apt to happen when lenders most need the swaps to manage basis risk.

Lenders emphasized that the swap market had only a limited capacity to serve their swap needs. Any price quote one observed for a swap, such as those published on Bloomberg,[13] are generally for a $25 million transaction. There is no guarantee one could get a posted rate for the size necessary to hedge a portfolio. How much one could hedge at one time depends on market conditions, but market participants suggested that it becomes problematic after $150 million and probably impossible beyond $400-$450 million even in the best of times. These limited levels can be contrasted with the approximately $22 billion of new FFELP originations last year.

One swap dealer reported that the amount it would hedge on a 5-year LIBOR/T-bill swap declined sharply during 1998. It offered to swap up to $250 million through August of 1998. During the rest of 1998, this swap dealer would only offer contracts up to $100 million. In the beginning of the year, the bid-ask spread for this swap was around 10 BP; by the middle of the year it had dropped to 6 BP; and by the end of the year, the bid-ask spread had increased to 20 BP. This was another indication of the

[13] Bloomberg is a service that publishes information on prices in financial markets.

increasing illiquidity of the LIBOR/T-bill basis swap. Other swap dealers and lenders also reported persistent illiquidity and higher swap rates during this time period.[14]

One lender told us their biggest business risk is long-term funding beyond 1 year. They prefer to use swaps to stabilize earnings and fund out to 2-3 years, but using swaps affects current income. For example, if the current LIBOR spot rate is 40 BP above the T-bill and the lender can borrow at LIBOR, his spread would be (T-bill + 280BP) – (T-bill +40 BP)) or 240 BP. However, the lenders' spread, in the future, would vary with relative movements in the TED spread. Alternatively, if the swap rate is 70 BP, the lender could lock-in a spread of (T-bill + 280 BP) - (T-bill +70BP) or 210 BP. This rate is less than the current spread of 240 BP, but it will not decline for the term of the swap contract. Thus, the lender would pay 30 BP to lock-in a spread. The spread would be lower, but the basis risk would be eliminated during the term of the swap.

If the long-term swap spread beyond 2-3 years increased, lenders might fund short to avoid swap costs. According to several lenders, given the swap expenses, fully swapping for the life of the long-term student loan is too expensive given their earnings targets. Another agreed they cannot afford to be fully swapped. Thus, they accept the basis risk implied by partial swapping. Beyond a term of 2-3 years, basis swap premiums become prohibitive.

Asset Backed Securities Are Especially Sensitive to Changes in Interest Rates on Instruments with Longer Terms to Maturity

As discussed previously, Sallie Mae and other large institutions have funded student loans through asset-backed securities (ABS), which have varying reference rates, markups, terms to maturity, or other conditions. However, since the middle of 1997, their use has been declining due to market conditions. In ABS lending, the debt is structured to match the expected life of the assets in the portfolio.[15][16] Inherent in such funding is the use of some longer term certificates or bonds because student loans can last up to 30 years. If the rates paid on the notes or longer term certificates increase, the net interest margin earned by the pool decreases. In late 1998, asset-backed securitization for all assets including student loans, ground to a halt as financing costs on long-term ABS securities proved too expensive to permit profitable securitizations. In late 1998 and early 1999, given the rates available in the capital markets, issuers were unable or unwilling to create ABS and postponed issuing ABS.

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[14] Electronic screens used by market participants to track the availability and price swaps do not report on the T-bill/commercial paper swap.

[15] Although credit risk is nearly eliminated due to federal reinsurance of guaranteed student loans, other risks remain, such as servicing and prepayment.

[16] This pass-through reflects the bankruptcy remote character of the ABS trust, the common over-collateralization of the trust, and the evaluation of servicing by credit rating agencies. All these create some cost for the issuer.

By mid-1999, securitization reemerged as illustrated in table 4.3. By late 1999, loan securitizations were undertaken again in larger volumes.

Table 4.3: Quarterly Issuance of Student Loan Asset Backed Securities (assets in $ billions)

1997				1998				1999			
1	2	3	4	1	2	3	4	1	2	3	4
$ 2.48	4.41	3.69	3.87	4.19	4.17	00	1.47	1.93	2.39	1.20	4.06

source: PaineWebber.

The growth, sudden absence, and recovery of ABS in student lending was a consequence of the increased leverage possible with ABS, which increases the sensitivity of ABS profits and risks to changes in interest rates, as well as the late-1998 disruptions in the market for underwriting long-term securities. The leverage in student loan ABS, as with all leverage, provided both higher returns and higher risk – increased volatility of the return on equity for lenders who create ABS. When the spread for securitizing narrowed in late 1998, large securitizers kept loans on their books because the return from securitizing had declined. They were waiting for an improved return, decreasing hedging costs, and a more liquid swap market that would let them hedge their risks. Swap or hedging costs have remained higher than usual in 1999 and 2000.[17] However, securitizers have brought new securitizations of student loans to market.

Securitization Does Not Eliminate Basis Risk If the Lender Does Not Fund With T-bill Indexed Securities

Student lending securitization may decrease the need for capital and using credit enhancements may allow for more favorable credit ratings that may lower funding costs. As a result, it may become the preferred method of financing for some lenders. However, basis risk remains. Several officials told us that securitizing student loans does not eliminate the effect of basis risk for the securitizer, because investors are also concerned about basis risk in their own investments. If the securities issued to investors by a student loan ABS are indexed to T-bills, the investor may face the basis risk between T-bills and their own cost of funds or income requirements. To ensure T-bill indexed securities are acceptable to investors, the securitizer may have to pay a rate premium to the investors and this premium reflects the investors' hedging costs to convert T-bill indexed rates into commercial rates that may be more acceptable to investors. Another option available to securitizers is to hedge the costs on its own book of business and pay the investor an index based on commercial rates. In either case, hedging costs will affect the lender's returns because such costs are borne or absorbed, to a large extent, by the lender.

[17] For example, on a 7-year LIBOR/T-bill swap, the rate in mid-October 1999, was 94 BP; in December 1999 the rate was 79-80 BP; and by April 2000, the rate was 95 BP.

Since 1995, Sallie Mae has tried to create a market for T-bill indexed asset-backed securities, which would eliminate its basis risk, but has had little success. When Sallie Mae has issued both T-bill and LIBOR indexed securities in an ABS, investors have shown a preference for LIBOR-based securities.

In a June 1999 securitization, Sallie Mae offered the choice of a Treasury-bill-indexed security and a LIBOR-indexed security, with both securities maturing in 2008. The margin over the T-bill rate was 87 BP, and the margin over the LIBOR rate was 8 BP. The difference between the two rates, which can be viewed as an implicit swap spread, was 79 basis points.[18] This swap spread is a bit larger than rate quotes obtained from the Bloomberg system (Tullet and Tokyo screen) of 75 basis points for a three-year swap on the day of the announcement, but is in the range of market quotes (using the bid side of the market). It is consistent with the calculated swap spread for a 10-year amortizing swap implied by an equivalent hedge and computed from quoted interest rates on Treasury securities and quoted prices for Eurodollar futures contracts around the time of the announcement. (See appendix X for a discussion of the calculation.)

On the day of the June 1999 Sallie Mae offering, the TED spread between the 91 day Treasury bill rate (in bond equivalent terms) and LIBOR was 47 basis points.[19] What accounts for the 32 basis point difference between the swap spread and the TED spread? Equivalently, why would Sallie Mae be willing to pay (and investors require) 79 basis points over Treasury bills in order to obtain LIBOR-indexed funding when the TED spread was only 47 basis points? The fundamental reason is that the TED spread is relevant for 3-month investments while the swap spread applies to a longer term investment. Between June 1999 and the maturity of the loans, the TED spread will fluctuate. The difference between the current TED spread and the swap spread reflects two factors: expectations about future TED spreads and a risk premium. One could interpret the latter as a premium that Sallie Mae was willing to pay (and that investors required) in order to lock-in LIBOR indexed payments (rather than Treasury bill indexed payments) and thereby avoid the effects of those fluctuations. A kind of insurance premium is therefore embedded in the 79 basis point swap spread.[20] [21]

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[18] Although the securities have a stated maturity of 9 years, they are effectively much shorter term. The weighted average life of the loans was 2.5 years.

[19] LIBOR is used on a 360-day basis, as quoted by the British Bankers Association, because the rate is specified in this fashion for the asset-backed security.

[20] In theory, not all risk premia need to be positive.

[21] The interest rates on adjustable-rate mortgages (ARMs) and conventional, fixed-rate mortgages differ for similar reasons. Even though today's rates on ARMs are below today's rates on conventional mortgages, a homeowner might prefer a fixed rate for two reasons. First, homeowners might expect that the interest rates on ARMs will rise so that, over the long term, the conventional mortgage is expected to be less costly. Second, homeowners might prefer the greater certainty associated with a conventional mortgage even if interest rates on ARMs are not expected to rise enough to make the conventional mortgage less costly. That is, homeowners might be willing to pay a type of insurance premium to avoid the risk of an unexpectedly large increase in the ARM rate.

Sallie Mae has noted that it only issued $165 million of the shortest term tranche on a T-bill basis in the June 1999 $1.0 billion transaction. Sallie Mae's intent in pricing, and issuing the T-bill security was to maintain a small presence in the T-bill ABS market and this presence does not indicate that Sallie Mae is willing to fund at these levels using T-bills. Sallie Mae has stated that it would be a mistake to try to infer too much about the premium that would exist in the market based on the small size and intent of the transaction.

A similar asset-backed security was issued by Sallie Mae in August 1999 and had an implied swap spread of 86 basis points, the difference between LIBOR-indexed and Treasury-bill-indexed portions, while the corresponding TED spread was 60 basis points. The underlying loans had an expected average maturity of just over 1 year. The increase in the implied swap spread appears to be within the range of market movements in swap rates between June and August. Sallie Mae noted that this was a small tranche and an attempt to maintain a small presence in the T-bill ABS market and should not be interpreted too broadly.

The swap spread included both the expected TED spread and insurance premium to cover unexpected movements in the spread. How large was the insurance premium in the swap spreads? Unless we know investors' (and Sallie Mae's) expectations of future TED spreads, we cannot say for sure. If the TED spread was not expected to change, the "insurance premium" at the time of the June ABS issue was about 32 basis points, (79 - 47 or T-bill markup minus LIBOR markup minus TED spread in June). On the other hand, if the TED spread projected by the CBO of 64 basis points is taken as the relevant expected TED spread, then the insurance premium, which covers risks and profits for the counter party, is only 15 basis points (79 - 64). But decomposing the difference into expectations of future TED spreads and an insurance premium is not really necessary. The main points are that the swap spread and not the TED spread provides the relevant comparison between interest rates for a long-lived investment, and that it reflects the market price for avoiding or taking on basis risk for the life of the swap.

Only Larger Lenders Can Securitize

Although securitization has been a successful business strategy for some large and sophisticated financial institutions, it cannot be used by most of the institutions that originate or hold student loans. According to financial market participants, securitization requires a level of expertise that many institutions do not possess. Several of the larger institutions that currently participate in the student loan program told us that they were evaluating or initiating some securitizations to determine whether that was an appropriate business strategy for them. One common theme in their comments was that securitization only made sense if one could continue to undertake securitizations, since there are large fixed costs in undertaking them. This implied that the lender needed a large volume of securitizations so that the large fixed costs could be spread out. This, in turn, required a large volume of originations or

purchases of student loans. Several lenders, thinking about securitizing, said they did their first one to "test it out" or "get their feet wet."

Some lenders told us that their portfolios were not large enough to make securitization efficient, and that securitization did not take care of the main problem that they faced— the mismatch between LIBOR and the T-bill (basis risk). Lenders would have to offer either T-bill securities (which investors would only take if they could find a reasonable swap) or LIBOR securities (which the lender could not afford to offer unless they found a reasonable swap themselves). An official at one non-securitizer said that some lenders securitize if they have a capital constraint (the respondent did not) or to reduce the volatility of cash earnings by locking-in long-term financing. Securitization makes sense only if the firm can take advantage of some type of market leverage. An official at another non-securitizer emphasized that creating and servicing an asset-backed security creates a servicing risk and that these risks persuaded it not to securitize in the future.

Comparing Volatility of Spreads Under Different Funding Options

Table 4.4 presents calculations of lenders' interest spreads between gross formula returns and interest costs, where estimated margins over reference rates are taken into account on the cost side and swap spreads are incorporated to allow for hedging costs. These calculations are based on the T-bill-indexed formula for lenders' returns that was in effect from mid-1998 through 1999 (no data on discounts, etc., were available). They are presented for four calendar quarters – a base period in the second quarter of 1998, the fourth quarter of 1998, which was the peak of flight-to-quality and financial market disruption following the Russian loan default, and the recovery quarters-the first and second quarters in 1999.

The table illustrates the fact that across a period of substantial financial market volatility, FFELP lenders were adversely affected and that the extent of the effect was related to funding options used. The volatility in 1998 was followed, in 1999, by continued greater financial uncertainty and continued higher risk premiums. Both swap spreads and lenders' margins over the reference rates at which they borrow recovered somewhat by the second quarter of 1999 and then rose again in the third quarter, reflecting these risk concerns as well as the beginning of some Y2K related distortions. Over the four quarters as a whole, the effects of this volatility were least for lenders who had access to T-bill funding, and hence did not face basis risk. The effects of the financial volatility, as presented in the table, were worst for those borrowing at LIBOR and fully hedged. Although the effects on the interest spread for a lender borrowing at LIBOR and not hedging appear to be less, such a lender could face worse outcomes in the uncertain future depending on the evolution of spreads. Spreads for securitization were adversely affected, apparently responding to the same forces that drove up swap spreads and hedging costs.

No FFELP lender exactly fits these paradigms, because most lenders use more than one funding option and may be neither totally hedged nor totally unhedged. In addition, FFELP lenders will have student loan portfolios that roll over with mixes of loans with different lender return formulas and financed and hedged at different times with different margins in borrowing costs and different hedging costs. For simplicity, the table uses the lender return formula for Stafford loans in repayment (not PLUS loans or consolidation loans). The table also uses, for hedging, the long-term hedge for an amortizing loan based on the model discussed in appendix X. Hence, the focus of the table is on the conditions facing a lender acquiring a Stafford loan in repayment and planning funding for its life at the date (calendar quarter) indicated. It is hoped that this analysis focuses on the "marginal" conditions affecting lenders' decisions and will shed some light on forces that would be at work if those conditions were to persist.

Table 4.4.a: Illustrative Interest Rate Spreads for FFELP Lenders Using Different Funding Options For Selected Quarters in 1998-99

Date	Funding Option				
	LIBOR, no hedge	LIBOR, hedged	T-bill indexed	ABS-LIBOR	ABS-T-bill
1998, quarter II	2.01 to 2.26%	2.07 to 2.32%	2.05 to 2.35%	2.04%	2.07%
1998, quarter IV	1.75 to 2.00	1.80 to 2.05	2.03 to 2.33	1.44	None done
1999, quarter II	2.14 to 2.39	1.82 to 2.07	2.13 to 2.43	2.10	1.99
1999, quarter III (preliminary)	1.89 to 2.14	1.68 to 1.93	1.99 to 2.29	1.79	1.86

Note: The spreads were constructed from information in tables 4.4.b and4.4.c, below. The interest expenses in each quarter, for each strategy (from table4.4.c) are subtracted from the yield in each quarter (from table4.4.b), resulting in the spreads in this table.

Table 4.4.b: Lender Gross Formula Yield Calculations For Selected Quarters in 1998-99

Quarter	Calculation	Rate
1998, quarter II	Treasury bill auction rate, last in May 1997 (5.17) + 2.30	7.47%
	Average Treasury bill rate in quarter (5.13) + 2.80	7.93
	Lender yield = maximum of two rates above	7.93
1998, quarter IV	Treasury bill auction rate, last in May 1998 (5.16) + 2.30	7.46
	Average Treasury bill rate in quarter (4.42) + 2.80	7.22
	Lender yield = maximum of two rates above	7.46
1999, quarter II	Treasury bill action rate, last in May 1998 (5.16) + 2.30	7.46
	Average Treasury bill rate in quarter (4.6) + 2.80	7.40
	Lender yield = maximum of two rates above	7.46
1999, quarter III (preliminary)	Treasury bill auction rate, last in May 1999 (4.63) + 2.30	6.93
	Average Treasury bill rate in quarter (4.82) + 2.80	7.62
	Lender yield = maximum of two rates above	7.62

Table 4.4.c: Calculated Spreads and Lender Interest Costs For Selected Quarters in 1998-99

Quarter	Funding Option				
	LIBOR, no hedge	LIBOR, hedged	T-bill-indexed	ABS-LIBOR	ABS-T-bill
1998, quarter II					
Yield from table 4.4.b	7.93%	7.93%	7.93%	7.93%	7.93%
Interest Cost Components					
Reference rate	LIBOR = 5.77	T-Bill = 5.13	T-Bill = 5.13	LIBOR =5.77	T-Bill = 5.13
Added margin	- 0.10 to +0.15	- 0.10 to +0.15	0.45 to 0.75	0.12	0.73
Swap spread	--	0.58	--	*	--
Total Interest Costs	5.67 to 5.92	5.61 to 5.86	5.58 to 5.88	5.89	5.86
Spread (yield – interest costs)	2.01 to 2.26	2.07 to 2.32	2.05 to 2.35	2.04	2.07
1998, quarter IV					
Yield from table 4.4.b	7.46	7.46	7.46	7.46	7.46
Interest Cost Components					
Reference rate	LIBOR = 5.36	T-Bill = 4.40	T-Bill = 4.40	LIBOR =5.36	T-Bill = 4.40
Added margin	0.10 to 0.35	0.10 to 0.35	0.73 to 1.03	0.66	None done
Swap spread	--	0.91	--	*	--
Total Interest Costs	5.46 to 5.71	5.41 to 5.66	5.13 to 5.43	6.02	None done
Spread (yield – interest costs)	1.75 to 2.00	1.80 to 2.05	2.03 to 2.33	1.44	None done
1999, quarter II					
Yield from table 4.4.b	7.46	7.46	7.46	7.46	7.46
Interest Cost Components					
Reference rate	LIBOR = 5.12	T-Bill = 4.60	T-Bill = 4.60	LIBOR =5.12	T-Bill = 4.60
Added margin	- 0.05 to +0.20	- 0.05 to +0.20	0.43 to 0.73	0.24	0.87
Swap spread	--	0.84	--	*	--
Total Interest Costs	5.07 to 5.32	5.39 to 5.64	5.03 to 5.33	5.36	5.47
Spread (yield – interest costs)	2.14 to 2.39	1.82 to 2.07	2.13 to 2.43	2.10	1.99
1999, quarter III (preliminary estimate)					
Yield from table 4.4.b	7.62	7.62	7.62	7.62	7.62
Interest Costs Components					
Reference rate	LIBOR = 5.53	T-Bill = 4.82	T-Bill = 4.82	LIBOR =5.53	T-Bill = 4.82
Added margin	- 0.05 to +0.20	- 0.05 to +0.20	0.51 to 0.81	0.30	0.94
Swap spread	--	0.92	--	*	--
Total Interest Costs	5.48 to 5.73	5.69 to 5.94	5.33 to 5.63	5.83	5.76
Spread (yield – interest costs)	1.89 to 2.14	1.69 to 1.93	1.99 to 2.29	1.79	1.86

Table 4.4 sources:

Treasury yield data come from the Federal Reserve H.15 release, as transmitted by Haver Analytics data service. Auction rates are converted to bond equivalent as described in Chapter 2.

LIBOR is the 3-month dollar LIBOR fixing rate, from the *London Times*, as reported by Haver. For comparability with the Treasury-based returns, LIBOR has been converted from a 360-day year to a 365-day basis. It is on the 360-day basis, rather than the bond equivalent 365 day because the 360-day basis is used for determining payments on floating rate notes and asset-backed securities (see, for example, page S-39 in the prospectus for SLM Student Loan Trust 1999-2).

Lenders' added margin over LIBOR on their financings was derived econometrically from 78 observations of Floating Rate Notes, issued by two large banks in the student loan business. The notes were all linked to 3-month LIBOR and had an average maturity, in 1998 and 1999, of 2 years. These results were likely to be representative for large, well-known banks. In order to show a range also relevant to smaller institutions, 15 basis points were added to the upper end of the range.

Lenders' added margin over the T-bill rate on their financings was the average for floating rate notes linked to the 3-month T-bill rate and issued by major government sponsored institutions. A 30 basis point higher rate is shown, to allow for dispersion among GSEs and to suggest the range that may be available to few private borrowers. This does not include the offset fee of 30 basis points that is paid to the government by Sallie Mae on its GSE holdings of FFELP loans.

Added margin for LIBOR-based ABS in 1998:Q2 is from the SMS issue in that period. For 1998:Q4, it is taken from the Student Loan Funding issue, adjusting the 1-month LIBOR spread to a 3-month spread using the difference in these rates in the cash market. For 1999:Q2 and Q3, the LIBOR-based added margins and, for all periods, the T-bill-based ABS added margins, are for Sallie Mae issues. The 1999 LIBOR-based added margins are averages across three or four tranches. For the shorter tranches, where T-bill based ABS were also offered, the added margins over LIBOR were 8 basis points for both the 1999:Q2 and 1999:Q3 issues.

The swap spread used to calculate the cost of funds if borrowed in LIBOR and swapped to a Treasury basis is the cost of a 10-year amortizing hedge estimated at Treasury (see appendix X for methodology); a shorter swap could cost a different amount. Also, market quotes for swaps of specific maturities in the relevant range vary somewhat; one source quoted spreads for 5-year swaps about 10 basis points above levels shown, while another source found them close to 7-year swap spreads. Actual spreads may depend on size of transactions and whether the balance is guaranteed. Spreads presented here are *not* for balance-guaranteed swaps.

The lenders' interest spread is the difference between the formula yield and lenders' interest expenses.

The degree of difficulty associated with the temporary financial market disruption in the fourth quarter of 1998 did not interrupt extension of loans to students. Furthermore, it does not appear in the analysis presented in table 4.4 to have been sufficient, by itself, to cause lasting difficulties for FFELP lenders. However, such a judgment ultimately must depend, of course, on the capitalization and other business characteristics of specific lender firms and agencies; analysis of such data was beyond the mandate of this study. The degree of recovery by the third quarter of 1999 (for which data were not entirely complete at the time of drafting this report) is even more difficult to assess. Market conditions had barely recovered from the Fall 1998 disruptions when they began to be affected by Y2K considerations, illustrating the array of circumstances that can make each year or quarter "special." In addition, judgment about the adequacy of a lender interest spread depends on evaluation of other costs, particularly servicing costs, and market requirements for returns on capital necessary for a going concern. The Study Group did not address these issues. It does appear, however, that the lower end of the range of interest spreads for FFELP lenders using LIBOR funding, if sustained over time, could press acceptable limits. Therefore, continued evaluation of lenders' circumstances would have been required, once the millennium date had passed, to determine whether lender interest spreads were in a range consistent with targets for lender returns when the 1998 reauthorization was enacted.[22]

In the second quarter of 1998, an unhedged LIBOR-based funding strategy would have generated a 2.01 to 2.26% gross spread, while a fully hedged LIBOR based strategy would have produced a 2.07 to 2.32% gross spread. These spreads were similar, as swap costs approximately offset the favorable LIBOR/T-bill spread. (See table 4.2 for an analysis of the interaction between hedging costs and interest spreads.) The spread for T-bill based funding was 2.05 to 2.35% and similar to the LIBOR based spread, but only some FFELP lenders can obtain T-bill indexed funding. ABS based funding based on LIBOR produced a spread of 2.04%, while ABS based funding based on T-bills produced 2.07%.

In the fourth quarter of 1998, T-bill rates fell relative to commercial rates due to the flight to quality, and lender margins on their costs of funds rose as the market disruption heightened concerns about risk. Consequently, LIBOR-based financing became relatively more expensive – see the first and fourth columns of the table – and lenders' net interest spread fell. For example, the spread with unhedged LIBOR financing fell by about 0.26 percentage point from the second quarter to the fourth quarter of 1998. In the second quarter, the range had been 2.01 to 2.26%, and by the fourth quarter it was 1.75% to 2.00%. Meanwhile, nearly half the decline in T-bill rates was offset by an increase in swap spreads between the second and fourth quarters. As a result, a lender who financed with LIBOR but swapped fully into a T-

[22] In October 1999, Congress changed the index for lenders' yield to commercial paper with a modified spread over the reference rate. This study does not evaluate and compare the new yield formula and spread with the T-bill based yield formula adopted in the 1998 reauthorization.

bill liability was also faced with less decline in costs than in gross yield and a narrowing of interest spread on new financing, by 0.27 percentage point (see second columns of tables).[23] In the second quarter, the range on hedged LIBOR funding was 2.07% to 2.32% and by the fourth quarter it had fallen to 1.80% to 2.05%. LIBOR – based ABS spreads fell sharply from 2.04% in the second quarter to 1.44% in the fourth quarter) as the greater risk sensitivity impacted the market and T-bill based ABS simply became unavailable at any remotely plausible rate as corporate underwriting dried up.

By the second quarter of 1999, spreads had improved. Spreads on unhedged LIBOR-based funding had increased a range of 2.14 to 2.39%, which were higher than the spreads in the second quarter of 1998. Hedged LIBOR-based funding spreads had increased a range of 1.82 to 2.07%, but were still below the spreads in the second quarter of 1998. The smaller improvement in the hedged LIBOR based funding was associated with a continued elevation of the swap spread. Lenders' margins in borrowing rate also had not quite fallen to the second quarter 1998 levels. The swap spread in the second quarter of 1998 had been 0.58%, in the last quarter of 1998 the swap spread was 0.91%, and by the second quarter of 1999 the swap spread was still 0.84%. In addition, lenders margins were 0.05% higher. Lenders issued ABS funding indexed to LIBOR and T-bills in the second quarter of 1999. The LIBOR based ABS spread had increased to 2.10%, slightly better than the spread in the second quarter of 1998. T-bill indexed ABS funding reappeared with a spread of 1.99%, slightly smaller than the spread in the second quarter of 1998.

The third quarter of 1999 reflected ongoing changes in interest rates and swap spreads. Unhedged LIBOR-funding spreads were 1.89 to 2.14%, lower than the spread in the second quarters of either 1998 or 1999 but above the fourth quarter of 1998. The change in the spread in part reflected the resetting of the student rate since the floor on the gross lender yield was no longer relevant, while the TED spread had risen again. Hedged LIBOR-based funding spreads were 1.68 to 1.93%, the lowest of the four quarters estimated, and still reflected unsettled financial conditions and elevated swap spreads and hedging costs. T-bill-indexed funding spreads were 1.99 to 2.29%, also the lowest of the four quarters. ABS-based funding spreads fell relative to second quarter spreads, which reduced the financial attractiveness of ABS based funding. ABS funding spreads often move with hedged funding spreads since both must reflect the costs of hedging to either the lender or the investor in the ABS.

It should be noted that the funding comparisons presented here are only examples of the more complex funding that may occur at many institutions. The spreads and margins only apply to the financing of new loans in repayment and do not represent any particular lender or group of lenders. Different lenders likely experienced different changes in the spreads and margins during the financial crisis in the fall of 1998 and ensuing quarters. Movements in economic conditions that affect the spreads and margins may be either transitory or long-term, and the consequences for

[23] Of course, lenders whose funding had previously been fully hedged would have benefited to the extent that the floor kept the gross formula yield from falling as much as current market T-bill rates. This benefit disappeared, of course, in 1999, when the student rate reset.

student lending of any changes in conditions depend on the level and persistence of such movements.

According to lenders and officials in other financial institutions If adverse conditions persist, lenders would reconsider participation in the FFELP program. Under such conditions, specific lenders could (1) continue to operate without hedging risk; (2) remain in the market and continue hedging to limit risk, while earning a lower return due to increase hedging costs; (3) invest less in student lending; or (4) exit the market. In general, lenders suggest that a continuation of lower spreads and increased risk and hedging costs could decrease the incentives of other financial institutions to enter student lending. If many firms exited student lending and few firms entered student lending, there might be insufficient capital to sustain a healthy and competitive FFELP program in the future.

On the other hand, the agility with which much of the FFELP industry weathered the financial storms of 1998-99 impressed several nonfinancial Study Group members. Signs of healthy innovation in the industry suggested to some Study Group members that the industry is basically in good shape and is able to cope with slightly higher persisting risk premiums in its financing costs – in swap spreads and lender borrowing margins – and with the occasional volatile episode. There was no overall consensus within the Study Group on how to weigh these considerations.

Chapter 5: Summary and Analyses of Study Issues

When the Higher Education Act was reauthorized in 1998, the yield formula was changed. Specifically the markup over the 91-day T-bill rate was lowered.[1] The law left in place a shift to a long-term Treasury reference rate in 2003. In 1999, Congress changed the reference rate for the lender yield to commercial paper from January 2000 through June 2003. However, the Congress did not modify the requirement to shift to a long-term Treasury reference rate in 2003.[2]

During the discussion of the 1998 change, lenders and others market participants were concerned about the future of the T-bill in light of projections of future surpluses in the federal budget. They believed such surpluses could undermine the the use of the T-bill as an effective benchmark for student loans. In addition, they were concerned with the basis risk imposed on lenders who borrowed at commercial rates but received yields on student loans reflecting Treasury bill rates.

FFELP financial community members of the Study Group[3] (lenders, state designated secondary markets, Sallie Mae, guaranty agencies, credit rating agencies, and investment banks) believed that a T-bill based reference rate with lower markups introduced a level of basis risk that endangered their ongoing participation in the FFELP program. In response to these lenders' concerns, Congress asked the Comptroller General and the Secretary of Education to analyze how rates, rate spreads, and liquidity have behaved in the past and how they might behave in the future.

In accordance with section 802 of the 1998 reauthorization of student lending, this study evaluates the 91-day Treasury bill, 30-day and 90-day CP rate, and 90-day LIBOR in terms of the following:

1. The historical liquidity of the market for each, and a historical comparison of the spread between (1) the 30-day and 90-day commercial paper rate, respectively, and the 91-day Treasury bill rate; and (2) the spread between the LIBOR and the 91-day Treasury bill rate.
2. The historical volatility of the rates and projections of future volatility.

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[1] The 1993 reauthorization legislation had set a long-term Treasury rate as the reference rate for lender yield effective in 1998, but the 1998 reauthorization mandated the continued used of the 91-day Treasury bill rate as the reference rate.

[2] Because long-term rates are usually higher than short-term rates, a change in the reference rate to a long-term instrument would require a lower markup to create the same lender yield. Consistent with the study mandate from the Congress, the Study Group did not evaluate the implication of changing to a long-term Treasury reference rate.

[3] Appendix XIV states their concerns and lists the members of the Study Group who participated in writing the appendix.

3. Recent changes in the liquidity of the market for each such instrument in a balanced federal budget environment and a low-interest rate environment, and projections of future liquidity assuming the federal budget remains in balance.
4. The cost or savings to lenders with small, medium, and large student loan portfolios of basing lender yield on either the 30-day or 90-day commercial paper rate or the LIBOR while continuing to base the borrower rate on the 91-day Treasury bill, and the effect of such change on the diversity of lenders participating in the program.
5. The cost or savings to the federal government of basing lender yield on either the 30-day or 90-day commercial paper rate or the LIBOR while continuing to base the borrower rate on the 91-day Treasury bill.
6. Any possible risks or benefits to the student loan programs under the Higher Education Act of 1965 and to student borrowers.

This chapter summarizes the study group's analyses of these issues. Summaries of the first three issues are drawn from analyses in chapters 2, 3, and 4 of this report. Analyses of the last three issues are developed in this chapter. Briefly, changes in the financial instrument used to set the reference rate along with changes in the markup, would have different effects on lenders, the government, and students and other FFELP participants, based on their ability to deal with the consequences of interest rate changes.

Issue 1: The Historical Liquidity of the Market for Each Instrument, and a Historical Comparison of the Spreads

The analysis in chapter 3 demonstrated that all of the cash market instruments--the 91-day T-bill, 30- and 90-day CP, and LIBOR--are liquid. Based on direct measures of liquidity (such as bid-ask spreads, yield volatility surrounding large trades, and trading volume); inferential measures (such as issue volume and outstanding amounts; and secondary market characteristics (such as the number of market markers, transparency, and homogeneity), T-bills appear to be the most liquid of the instruments historically.

Spreads between T-bills and the commercial rates have fluctuated over time, as seen in chapter 2, but they have generally narrowed and become less volatile in the 1990s compared to earlier years. In the 1970s, for example, the TED spread (3-month LIBOR – 3-month T-bill) was as high as 550 BP, and in the early 1980s, it surpassed 300 BP on three different occasions. By contrast, in the 1990s, the spread remained below 100 BP between the end of the Gulf War in 1991 and the international financial crisis in the fall of 1998, and even in 1998 it remained above 100 BP for less than 30 days.

LIBOR and CP tend to move more closely with one another than either one does with T-bills. However, they have tended to move increasingly more closely together as financial markets have become more integrated since the mid-1980s. Historically, in times of international stress, CP usually moved more closely with the T-bill than with LIBOR--that is, domestic rates tended to move together. In the fall 1998 crisis, however, CP and LIBOR moved together, and both diverged from the T-bill as a domestic and international "flight to quality" drove investors to the safest instrument. The movement to Treasury paper lowered interest rates on Treasuries compared to interest rates on commercial financial instruments.

The mandate's language asked for an analysis of the liquidity of the market for each instrument and a comparison of the historical spreads between the instruments. However, several members of the study group noted that the liquidity of instruments whose returns are derived from the base instruments rates also affect the lenders. For example, if a lender issued T-bill based instruments to fund student lending, its cost of funds would be a T-bill rate plus some margin. Many lenders believe such T-bill based funding requires a large margin over T-bill rates in order to encourage investors to buy T-bill based securities, since investors have a preference for commercial rate based securities.

Issue 2: The Historical Volatility of the Rates and Projections of Future Volatility

Analysis in chapter 2 demonstrated that each of the rates showed volatility in past decades, but each also showed a decline in volatility over the past 10 -15 years compared to previous periods. For example, the coefficient of variation or the relative volatility of the T-bill was 0.35 from 1973 to 1984 and was 0.27 from 1985 to 1999. The average T-bill rate was 8.91% from 1973 to 1984 and was 5.69% from 1985 to 1999. One factor that might explain the difference is that greater volatility in the T-bill rate tends to be associated with a higher level of the rate, and rates have been relatively low during the 1990s. Thus, relative rate volatilities have been decreasing. Like T-bill rates, LIBOR and CP rates have shown lower relative volatility during the 1990s compared to previous periods. The 1999 CBO and administration forecasts show that future volatility of each rate is expected to remain low relative to the 1970s or 1980s, just as the rates themselves are expected to remain low.

Volatility of spreads between the various rates has declined in recent years. For example, the coefficient of variation of the TED spread was 0.6 from 1973 to 1984 and declined to 0.51 from 1985 to 1999. In the same time periods the average spread went form 1.64% to 0.67%. Also, the coefficient of variation for the spread between 3-month commercial paper and T-bills went from 1.33 to 0.59 while the average spread increased from 0.31% to 0.41%.

Chapter 2 of this report notes that the spreads between private sector rates and the Treasury bill rate are larger and more volatile when inflation is high and when cyclical disturbances induce active monetary policy. CBO projections done for the study group assumed a noninflationary economic expansion, fiscal restraint and a benign monetary policy. Under such conditions both the spreads themselves and the volatility of the spreads between T-bill and commercial rates will be lower.

However, FFELP members of the Study Group suggested that there would be an increase in the volatility of lender returns if the index continued to be based on T-bills in the future as federal budget surpluses continue to grow. They contended that such increased volatility, in conjunction with narrowing spreads on student loans (T-bill based yield minus commercial rates) would decrease lender participation in the market. (See appendices XIV for a discussion by the FFELP financial community.)

Issue 3: Recent Changes in the Liquidity of the Market for Each Such Instrument, and Projections of Future Liquidity in a Balanced Budget Environment With Low Interest Rates

The Study Group was unable to reach consensus on the impacts of potential future changes in the liquidity of T-bills. The FFELP community members contended that T-bills would be less liquid in the future due to expected future budget surpluses. The FFELP members believe such surpluses would depress t-bill rates and the lender's net yield (the difference between the formula yield and the lenders' cost of funds) if T-bill rates were the reference rate. They also believe that changes in the liquidity of T-bills would increase the volatility of the spread between T-bill and commercial rates. Such changes would decrease the incentive for lenders to participate in the guaranteed student loan program. Over the foreseeable future, Treasury officials believe that appropriate management of the Treasury offerings of Treasury instruments in terms of frequency of offering and term to maturity of the offered securities would maintain the liquidity of 3-month T-bills. In addition, Treasury officials believed that the cumulative budget surpluses are more likely to affect the general level of interest rates rather than affect the spreads between short-term bills and other money market rates.

There was no consensus about the future liquidity of the Treasury market and its ability to reflect underlying market conditions. Chapter 3 concludes that it is difficult to determine what liquidity will be in the future for any of the alternative indices. According to the Treasury, the advances in information technology, electronic trading, and expanded trading hours would seem to enhance liquidity in most of these markets. Furthermore, the increased sophistication of financial market participants can be expected to bring these markets closer to each other in characteristics because issuers in each market are competing for largely similar investors. In contrast, lenders noted that the past liquidity of the T-bill market may not represent the future liquidity of the T-bill market. In addition, they questioned the ability of the T-bill rate to function as a valid or useful reference rate for lender yield in the FFELP. Lenders believe that in an era of budget surpluses, the likelihood that a T-bill reference rate and markup will be able to ensure a lender spread that can encourage program participation is in doubt. (See appendix XIV for comments on the report and liquidity concerns of representatives of FFELP lenders and other financial institutions who were in the Study Group.)

Treasury agreed that concerns have arisen about a possible decrease in liquidity of T-bills because of declining future issuance of Treasury paper as the United States enters what is projected to be an era of budget surpluses. As chapter 3 points out, while inferential measures of liquidity, such as issue size, may show decreases, some of these inferential measures have risen and fallen in the past decade with little effect on more direct measures of liquidity, such as bid-ask

spreads. In addition, T-bills, which are auctioned at a much greater frequency than other Treasury securities, are an important cash management tool, because the frequent auctions permit debt managers to adjust financing in the face of dynamic and volatile cash balances. As such, Treasury is committed to a debt management policy that will maintain a deep and liquid short-term T-bill market.[4] (See appendix XV for Treasury's statement on debt management policy.)

Lenders pointed out that recent Treasury announcements demonstrated that the liquidity of the Treasury market was affected by the historic reductions in public debt. The February 2000 Mid-Quarter Financing announcement reduced the number of auctions of 52-week bills and mentioned the possible elimination of that series. Treasury noted, however, that the reduction in the number of 52-week bill auctions will permit increasing auction size and liquidity of the 91-day Treasury bill market.

[4] In addition, the Treasury is committed to preserving the liquidity of its issues at other key benchmark maturities, which will permit continued calculation of constant maturity yield curves with a range of representative yields for private sector use.

Issue 4: The Cost or Savings to Different-Sized Lenders of Basing Lender Yield on an Alternative Instrument, and the Effect of Such Change on the Diversity of Lenders

As described in chapters 1 and 4, FFELP lenders use a variety of different business strategies regarding originating, holding, and selling or securitizing student loans. The effects on lenders of a change in the reference rate and markup would vary somewhat by the strategy that they use. Changes in the yield formula will impact lenders differently according to which funding option they are currently using. Under the commercial-paper-based yield formula, lenders that borrow at commercial rates will face reduced basis risk. If they have not hedged their basis risk under the T-bill-based yield formula, the change to a commercial-paper formula will reduce their risk and stabilize their interest margin. In addition, lenders who hedged their basis risk under the T-bill-based yield formula, will have a reduced need to bear the costs of hedging under the commercial-paper-based formula.

Effects on Lenders Who Originate and Hold Through Repayment

Lenders who borrow to originate and hold loans face basis risk if their interest income based on the lender's yield differs from their interest expenses based on commercial rates. Because their primary source of income is the formula spread (the difference between the formula yield and their cost of funds), lenders often prefer to earn income and pay interest based on the same reference rate. In theory, lenders can use hedging strategies to address their risks. But hedging increases interest rate expenses and lowers expected profits even while it reduces the risk or volatility in those profits. The choice of hedging, not hedging, or partially hedging depends on management's judgment about the consequences of the choice. Furthermore, hedging costs often increase when markets become more volatile, and hedging in such markets further decreases the spread. In other cases, in volatile markets, counterparties needing to undertake hedging may not even be willing to offer sufficient volume for large lenders trying to hedge.

Given the yields, interest expenses, and risks inherent in this basic strategy of originating and holding, many lenders have explored or adopted other strategies. Their ability to adopt other strategies, however, is often tied to the basic size of their portfolio of student loans, their ability to affect costs based on changing the size of the portfolio, and whether they can adopt more sophisticated strategies.

Effects on Lenders Who Originate, Hold Temporarily, and Sell

Many lenders with small portfolios do not hold loans on their balance sheets permanently, since the costs of holding and managing the portfolio--such as servicing costs (including the actual processing of the origination) or hedging costs--are high when compared to the lenders' yield. Instead, many small originators hold loans temporarily and subsequently sell them to Sallie Mae, a state secondary market, or a large bank.

Lenders who originate and sell earn their profit based on the gain they can book because of the sale. In some cases, they sell soon after origination and, in other cases, they hold the loan while the student is in school. Selling once the student graduates is common, since servicing costs, based on a servicing contract, often increase substantially once the student graduates.

The price obtained by the lenders selling loans depends on overall economic conditions and the efficiency and prices of the lenders buying the loans. If the fundamental economics of student lending become adverse for lenders who buy the loans, the price received by the originator will decline and affect profits and risks.

Effects on Lenders Who Buy and Hold Through Repayment

Lenders who buy loans face the same risk as other lenders. However, these buyers are often large institutions that can take advantage of scale economics in servicing and holding loans. Large for-profit institutions may have access to better funding sources, such as internal funding by the parent firm or funding from overseas. Larger for-profit institutions are also more likely to be able to hedge risks by swaps or by diversification across different components of the diversified firm. Some not-for-profit institutions may have funding advantages based on access to tax exempt funding and/or administrative savings since they do not need to create asset-backed securities, with their attendant costs, to undertake asset-backed borrowing.

If servicing and holding costs are lower for large buyers than they are for small originators, competition among the buyers may lead them to offer sellers higher prices as buyers compete with each other to acquire student loan assets. However, large buyers may be able to add to their portfolios more cheaply by originating than they can through buying. In particular, this could be true if large buyers' origination costs are lower than the origination costs of the sellers. Thus, the price offered to small originators by large buyers will reflect their relative cost advantages in originating, purchasing, servicing, and holding loans in portfolio.

Effects on Lenders Who Securitize

Lenders who originate or buy can either hold on their balance sheet or securitize. The choice between the two funding strategies reflects management's goals, constraints, and capacities. Both for-profit and not-for-profit institutions face the constraints imposed by investors and credit rating agencies, who will require higher interest rates and capital levels if risks are higher. In general, lenders find asset-backed securitizations more attractive to the extent they decrease risks and lower the returns that must be paid to bond and stock holders. However, only the largest institutions can adopt this approach, because the ability to securitize depends on portfolio size and the flow of new loans.

Asset-backed securitizations for student loans started in the mid-1990s. Asset backed securitization for student loans dried up in late 1998 when the LIBOR and T-bill rates diverged. The market had reappeared by the middle of 1999, and volume continued to increase in the early part of 2000.

A securitization can offer investors a return based on T-bill or LIBOR.[5] Only Sallie Mae has tried to develop a market for T-bill-based securities, and they have had little apparent success. With a T-bill-based security, investors bear the interest rate risk if their funding costs or net income needs diverge from the T-bill-based yield. Investors in T-bill-based student loan asset-backed securities can bear the risk or swap out of it. Historically, the investors have tended to require a relatively high return on the T-bill-based securities due to basis risk bearing or hedging costs. On the other hand, if the securitizer wants to issue LIBOR-based securities to please investors, the securitizer must bear the interest rate risk within the securitization or swap out of it. In either case, hedging costs will affect the profits and risks for securitizers. FFELP community members noted that, since the 1998 financial market disruptions, securitizers have found it increasingly difficult to swap out of basis risk because the term of affordable swaps has been decreasing.

In many senses, securitizations are just a special form of buying and holding, with funding done via asset-backed securities. Consequently, any analysis of how changes in the yield formula would affect lenders who buy and hold would also apply to securitizers. However, securitizations are unique since they usually need lower capital levels than other funding sources of student loans due to the financial structure of the pools and the securities issued. However, these lower levels of capital make them especially sensitive to interest rates on funding or fund availability, as happened in late 1998.

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[5] Some securitizations offer an auction rate, which resets periodically but is not tied to a particular index. However, market analysts report that auction rate notes have rates that track LIBOR.

Effects on Different-Sized Lenders and the Diversity of Lenders

The preceding analysis--of the effect of a change in reference rate on lenders using different strategies--also applies to the effects on different-sized lenders, because different-sized lenders tend to use different strategies. Most small lenders tend to originate loans and sell them after origination, often when the borrower enters repayment. Those who purchase loans tend to be larger lenders, and those who securitize are among the very largest.

Small lenders often act as originators for large lenders who buy their loans. For example, as of December 31, 1999, Sallie Mae had $1.0 billion in advances to student loan lenders that actually originate loans, which they later sell to Sallie Mae. The extent to which small lenders act as originators for large lenders can also be illustrated by information on the concentration of originating and holding. For example, SLMA and the secondary markets jointly held 55.8% of outstanding loan balances at the end of 1998. However, SLMA did not originate loans, while the secondary markets originated about 12.1% of all loans in 1998. In contrast, banks originated 80.4% of all loans while they held 42.5% of loan balances at the end of 1998. In 1998, the top 50 originators were 67% of the market, while the top 50 holders were 88.2% of the market. Thus, holding is more concentrated than originating in the student loan industry.

The future diversity among lenders does not depend only on the formula yield and spreads. Some banks may offer student loans as a community service, or to have access to new customers. Thus, profits created from providing new services to students may warrant continued offering of student loans even if the profit and risks on the student loan operation, in and of itself, do not. Nonetheless, the rate at which firms may enter, remain in or exit from student lending reflects expectations about profits and profit volatility on student loans, which are only partly determined by the formula yield and funding costs.

Diversity of lenders also depends on economies of scale. For example, securitization only makes sense if the lender can deal with a large volume of loans so that economies of scale can be realized and large fixed costs can be spread out. In addition, according to financial market participants, securitization requires a level of expertise that many institutions do not posses. Consequently, small volume originators and holders may not be able to enjoy the economic advantages created by securitizations.

A crucial component of costs, and thus of profits, is originating and servicing costs, which often appear to vary by size and composition of the portfolio (type of degree or of school attended by the student). Often, servicing is contracted out by smaller lenders, while the largest lenders service their own portfolios and provide servicing for smaller lenders. To the extent spreads shrink or become more volatile, originating and servicing costs may increasingly determine which lenders are willing to enter, remain in, or exit from student lending. Thus,

congressional decisions about yield formulae may indirectly determine the market concentration or diversity among lenders.

However, congressional decisions that maintain higher yields, and encourage smaller lenders to remain in the program, will also enhance the yield for larger lenders who may not need the encouragement. Due to economies of scale, such lenders may already earn a sufficient yield to keep them in student lending. Recent trends in the concentration of originations and holding are consistent with the economy of scale premise. Over time, fewer firms are originating and holding student loans--originations and holding are becoming more concentrated. This increasing concentration, especially in holding, probably reflects, in part, the economies of scale in servicing, holding, and securitizing loans.

Issue 5: The Cost or Savings to the Federal Government of Basing Lender Yield on an Alternative Instrument

Any change in the yield formula could impact budgetary costs, and thus the effects of formula changes must be addressed in the federal budget process. However, the Study Group was unable to reach consensus on the correct measure of cost to the government. Two measures of cost were discussed: budget-based, and economic- or risk-based costs. All members agreed that any change in the reference rate and markup must be budget neutral, i.e., they must not increase expected net outlays as determined by the Congressional Budget Office. However, no consensus was reached on the appropriateness of considering or measuring risk-based costs for the government created by any change in the index formula.

As part of the late 1999 congressional deliberations on index changes, CBO projected the budgetary costs of a change to a commercial paper index. CBO used probabilistic scoring to evaluate changing the reference rate to the 3-month commercial paper rate and changing the markup to 1.74%, while a student is in school, grace or deferment and to 2.34% while a student is in repayment. Its analysis yielded a small budgetary savings. (See chapters 1 and 2 and appendix IV for further discussion of CBO's approach.)

Some members of the Study Group, including executive branch representatives, believe a change to a commercial rate for the lender index would transfer basis risk to the government. The Executive Branch representatives believe that such a transfer, without an appropriate adjustment of the markup, would not let the government earn income for bearing the risk as would happen to a private sector entity bearing the same risk. The executive branch members of the study group believe that the government should not bear the risk or the economic cost without earning the income for bearing such risk.

The executive branch believes that the costs of basis risk are represented in financial markets by the basis-risk premiums built into lenders' costs under T-bill indexing for their yields. The executive branch representatives suggested that the private sector costs of hedging in the swap markets illustrate these risk-premiums or costs borne by private lenders who deal with basis risk under the T-bill-based lender yield. Executive branch officials suggested that specific ways to measure these costs might include swap spreads reported in the markets, the implicit hedging spread between LIBOR and T-bill built in ABS, or the theoretical swap simulations developed by and calculated at the Treasury. It was noted, by the executive branch, that if a lender did not hedge (through swaps or some other mechanism), the lender's equity return would probably expect to earn an average higher return to compensate for the volatility.

FFELP community members on the Study Group disagreed with the executive branch analysis. They pointed out that the swap markets that might let lenders address basis risk were "inefficient and flawed." Such inefficiencies were noted in surveys of lenders and during interviews of financial institutions that participate in the program. Further, the FFELP community members have emphasized that there were flaws in the swap market and that this hedging market might not be available or could be too expensive, under certain conditions, as happened in the fall of 1998. In addition, the FFELP community members believed that government estimates of basis risk based on their theoretical swap simulation model did not provide an appropriate measure of value.

Portions of chapter 4 and appendices X and XII detail executive branch concerns and analytical approaches toward economic or risk-based cost calculations. Portions of chapter 4 and appendixes XI and XIV detail the concerns of the FFELP community members and their explanation of the reasons to switch to a commercial-rate-based index.

Issue 6: Any Possible Risks or Benefits to the Student Loan Programs Under the Higher Education Act of 1965 and to Student Borrowers

Since the borrower interest rate is not changed, there should be no impact on borrowers in terms of the rates they pay. In addition, guarantors, servicers, and schools should feel no direct impact. However, if changing the yield formula leads to changes in lender use of different funding options or business strategies, these non-lender participants in the guaranteed student loan program may be affected indirectly. For example, changes in the lender yield formula may affect different lenders differently and thus indirectly create changes in market structures that could affect service or investment by lenders and their relationships with other market participants.

The risks or benefits to the students and the student loan program of any change in the formula yield will depend on how any changes affect lender participation. FFELP financial community members on the Study Group believed that a formula change that leaves basis risk with the lenders might: (1) decrease the availability of rate discounts for students by lenders, (2) discourage new participants, (3) accelerate the loss of current participants, and (4) discourage all participants from undertaking real investment to create a functionally efficient program that could improve services to schools and students. FFELP community members on the Study Group believed that a formula change that lowers either the number of lender participants or real investment in the program by lenders - will not be improved for students and schools. In general, higher and more stable lender spreads are likely to encourage participation and real investment, while lower and less stable spreads will discourage participation and investment.

Government officials noted that any change in the size of the spread and its stability must also consider the costs to the government and the impact on diversity among loan providers. Executive branch officials noted that changes in the lender yield formula may affect different types of lenders differently. It is not clear how each type of lender would ultimately respond to the formula change as different business strategies picked by each lender interact to determine whether continued participation makes sense. Thus, the ultimate costs and risks of changes cannot be easily predicted.

Non-government and non-FFELP community members of the Study Group proposed a set of criteria for evaluating changes to the lenders' yield calculation. Their criteria emphasized that:

- budget neutrality should be maintained;
- benefits of any change should be shared by all program participants including the borrowers;
- both the short-term and long-term aspects should be addressed;
- lenders should have a fair rate of return in a competitive market;

- any change should be consistent with changes in volatility and liquidity in the market; and finally
- any change in the reference rate should not affect the second study on using market mechanisms.

See appendix XIII for a copy of the full set of criteria and FFELP community members' response to the criteria.

APPENDIX 1: LEGISLATIVE MANDATE IN THE HIGHER EDUCATION ACT OF 1998 (P.L. 105-244)

SEC. 802, STUDY OF THE FEASIBILITY OF ALTERNATIVE FINANCIAL INSTRUMENTS FOR DETERMINING LENDER YIELDS

(a) Study Required.--The Comptroller General and the Secretary of Education shall convene a study group including the Secretary of the Treasury, the Director of the Office of Management and Budget, the Director of the Congressional Budget Office, representatives of entities making loans under part B of title IV of the Higher Education Act of 1965, representatives of other entities in the financial services community, representatives of other participants in the student loan programs, and such other individuals as the Comptroller General and the Secretary of Education may designate. The Comptroller General and the Secretary of Education, in consultation with the study group, shall evaluate the 91-day Treasury bill, 30-day and 90-day commercial paper, and the 90-day London Interbank Offered Rate (in this section referred to as ``LIBOR'') in terms of the following:

(1) The historical liquidity of the market for each, and a historical comparison of the spread between (A) the 30-day and 90-day commercial paper rate, respectively, and the 91-day Treasury bill rate, and (B) the spread between the LIBOR and the 91-day Treasury bill rate.
(2) The historical volatility of the rates and projections of future volatility.
(3) Recent changes in the liquidity of the market for each such instrument in a balanced Federal budget environment and a low-interest rate environment, and projections of future liquidity assuming the Federal budget remains in balance.
(4) The cost or savings to lenders with small, medium, and large student loan portfolios of basing lender yield on either the 30-day or 90-day commercial paper rate or the LIBOR while continuing to base the borrower rate on the 91-day Treasury bill, and the effect of such change on the diversity of lenders participating in the program.
(5) The cost or savings to the Federal Government of basing lender yield on either the 30-day or 90-day commercial paper rate or the LIBOR while continuing to base the borrower rate on the 91-day Treasury bill.
(6) Any possible risks or benefits to the student loan programs under the Higher Education Act of 1965 and to student borrowers.
(7) Any other areas the Comptroller General and the Secretary of Education agree to include.

(b) Report Required.--Not later than 6 months after the date of enactment of this Act, the Comptroller General and the Secretary shall submit a final report regarding the findings of the study group to the Committee on Education and the Workforce of the House of Representatives and the Committee on Labor and Human Resources of the Senate.

APPENDIX 2: GOVERNMENT AND NON-GOVERNMENT STUDY GROUP MEMBERS

The Comptroller General, the Secretary of Education, the Secretary of the Treasury, the Director of the Office of Management and Budget and the Director of the Congressional Budget Office were designated by statute as members of the study group. Representing these agencies for the study group were:

General Accounting Office: Thomas J. McCool, Managing Director, Financial Markets and Community Investment

Department of Education: Donald Feuerstein, Special Assistant, Office of the Deputy Secretary

Treasury Department: Robert Cumby, Deputy Assistant Secretary, Office of Economic Policy

Office of Management and Budget: Lorenzo Rasetti, Program Examiner

Congressional Budget Office: Nabeel Alsalam, Principal Analyst

Private sector members of the group, as designated by the Comptroller General and the Secretary of Education, were as follows:

Bill Beckmann
President and CEO, Student Loan Corporation

Kathleen L. Cannon
Senior Vice President, Bank of America

Rene R. Champagne
Chairman, President, and CEO, ITT Educational Services, Inc.

Jacqueline Daughtry-Miller
Vice President, Independence Federal Savings Bank

Anthony P. Dolanski
Executive Vice President: Systems and Finance, Sallie Mae, Inc.

Ivan Frishberg
Higher Education Project Director, U.S. Public Interest Research Group

Richard D. George
President and CEO, Great Lakes Higher Education Corporation

Prof. Jonathan Gruber
MIT Department of Economics

Arthur M. Hauptman
Independent Student Financial Aid Consultant

Michael H. Hershock
President and CEO, Pennsylvania Higher Education Assistance Agency

James C. Lintzenich
President and CEO, USA Group

Claire J. Mezzanotte
Senior Director: Structured Finance, Asset Backed Securities, Fitch IBCA, Inc.

Barmak Nassirian
American Association of Collegiate Registrars and Admissions Officers

Chalmers Gail Norris
Executive Director, Utah Higher Education Assistance Authority

Richard H. Pierce
President and CEO, Maine Education Services

Dr. Susan L. Pugh
Director, Office of Student Financial Assistance, Indiana University-Bloomington

Marilyn B. Quinn
Executive Director, Delaware Higher Education Commission

Anthony Samu
President, United States Student Association

Dr. Robert A. Scott
President, Ramapo College of New Jersey

Paul S. Tone
Senior Vice President: Industry & Government Relations, UNIPAC

Paul W. Wozniak
Managing Director, PaineWebber Incorporated

APPENDIX 3: A BASIC CHRONOLOGY OF BORROWER RATES; LENDER YIELDS; LOAN PROGRAM ACTIVITY; AND CERTAIN QUARTERLY INTEREST RATES

Borrower Rates and Lender Yields

Effective date	Borrower rate(s)	Lender yield(s)
11/8/65	6% for Stafford; ED subsidizes 5% before repayment 3% in repayment based on need	Determined quarterly by committee; cap of 3% over borrower rate
10/31/68	7% for Stafford; repayment subsidy 1% and only in States with 6% cap	
10/1/77		91-day T-bill plus 3.5% rounded to nearest 1/8th; cap of 5% over borrower rate
10/1/79		Cap eliminated
1/1/81	9% for Stafford and PLUS[1]	Rounding eliminated; halved for tax-exempt funding with 9.5% floor
10/1/81	14% for PLUS[2]	
11/1/82	12% for PLUS[3]	
9/13/83	8% for Stafford[4]	
4/7/86	Weighted average rounded to nearest whole % with 9% floor for consolidation	
1/1/87	52-week T-bill plus 3.25% with 12% cap for PLUS[5]	91-day T-bill plus 3.25% for Stafford
7/1/88	8% until 48 months in repayment, 10% afterwards for Stafford[6]	
10/1/92	91-day T-bill + 3.1% with 9% cap for Stafford; 52-week T-bill + 3.25% with 10% cap for PLUS	91-day T-bill + 3.1% for Stafford
	Lenders required to rebate excess interest on initial 8/10% loans	

[1] Possible decrease to 8% upon finding by Secretary that 91-day T-bill below 9%
[2] Possible decrease to 12% upon finding by Secretary that 52-week T-bill below 14%
[3] Resulting from finding by Secretary that 52-week T-bill below 12%.
[4] Resulting from finding by Secretary that 91-day T-bill below 9%.
[5] Outstanding loans allowed to convert; "Rule of 78s" calculation prohibited
[6] Possible adjustment to reflect differing rates on borrower's outstanding loans

Effective date	Borrower rate(s)	Lender yield(s)
	when they hit 10%; excess interest to be rebated on all subsequent loans made at 8/10% or 8%, regardless of stage of repayment	
10/1/93		Special treatment of tax-exempt funding repealed with grandfathering
7/1/94	8.25% cap for Stafford	
	PLUS interest rate 52-week T-bill + 3.1% with cap of 9%	
	Stafford variable rate applied to all new loans, regardless of prior borrowing	
	Consolidation interest rate now determined by weighted average rounded upward to nearest whole %; minimum interest rate eliminated	
1/1/95	Stafford variable rate applied to old 8/10% loans	
7/1/95	91-day T-bill + 2.5% in school, grace or deferment, + 3.1% on repayment for Stafford	91-day T-bill + 2.5% in school, grace or deferment, + 3.1% on repayment for Stafford
11/13/97	Stafford rates for consolidation	
7/1/98	91-day T-bill + 1.7% in school, grace or deferment, + 2.3% on repayment for Stafford.	91-day T-bill + 2.2% in school, grace or deferment, + 2.8% on repayment for Stafford
	91-day T-bill + 3.1% for PLUS	
10/1/98	Weighted average rounded up to nearest 1/8 % with 8.25% cap for consolidation	
1/1/2000		3-month CP + 1.74% in-school, grace or deferment; 3-month CP + 2.34% in repayment for Stafford.
		3-month CP + 2.64% for PLUS

Source: U.S. Department of Education

New Loan Originations and Concentration, Selected Years

Fiscal year	New FFELP volume ($billion)	Share originated by top 10 originators (percent)	Share originated by top 50 originators (percent)
1988	10.2	26	53
1992	13.6	32	58
1995	20.8	49	77
1997	21.5	49	80
1998	22.4	49	79

Source: Department of Education

Loan Holdings and Concentration, Selected Years

Fiscal year end	Outstanding FFELP volume ($billion)	Share held by top 10 loanholders (percent)	Share held by top 50 loanholders (percent)
1988	45.1	42	61
1992	62.0	51	73
1995	92.9	59	85
1997	112.4	59	87
1998	121.7	59	88

Source: Department of Education

New Student Loan ABS Issuances

Year	New student loan ABS issuances ($ million)
1991	347
1992	0
1993	594
1994	3,578
1995	3,518
1996	9,502
1997	14,446
1998	9,830
1999	9,588

Source: PaineWebber Incorporated. Includes all issuances by for-profit issuers and floating-rates issuances by state or non-profit issuers. Does not include certain other issuances, such as auction-rate securities, by state or non-profit issuers.

Quarterly Interest Rates for Relevant Series

Year	Quarter	91-day T-Bill (B.e.y.)	3-month LIBOR		3-month CP	
			360-day	365-day	Rate	B.E.Y.
1990	1	8.04	8.40	8.52	7.97	8.25
	2	8.03	8.47	8.59	8.09	8.37
	3	7.74	8.17	8.28	7.77	8.04
	4	7.21	8.08	8.20	7.62	7.88
1991	1	6.22	6.87	6.96	6.53	6.73
	2	5.76	6.17	6.25	5.90	6.07
	3	5.55	5.84	5.92	5.59	5.75
	4	4.66	5.05	5.12	4.82	4.95
1992	1	4.02	4.25	4.31	4.07	4.17
	2	3.78	4.04	4.10	3.83	3.92
	3	3.14	3.42	3.46	3.23	3.30
	4	3.17	3.62	3.67	3.47	3.55
1993	1	3.05	3.27	3.32	3.25	3.32
	2	3.05	3.27	3.31	3.10	3.17
	3	3.08	3.26	3.30	3.11	3.18
	4	3.14	3.42	3.47	3.20	3.27
1994	1	3.34	3.57	3.62	3.41	3.49
	2	4.15	4.47	4.53	4.27	4.38
	3	4.63	4.97	5.04	4.75	4.87
	4	5.46	5.96	6.05	5.72	5.88
1995	1	5.95	6.29	6.38	6.06	6.24
	2	5.79	6.12	6.21	5.88	6.05
	3	5.54	5.89	5.97	5.61	5.77
	4	5.43	5.86	5.94	5.57	5.73
1996	1	5.08	5.40	5.48	5.14	5.28
	2	5.17	5.52	5.59	5.31	5.46
	3	5.26	5.59	5.67	5.37	5.52
	4	5.11	5.53	5.61	5.31	5.46
1997	1	5.21	5.56	5.64	5.34	5.49
	2	5.21	5.81	5.89	5.60	5.76
	3	5.18	5.73	5.81	5.50	5.66
	4	5.24	5.84	5.92	5.63	5.79
1998	1	5.19	5.66	5.74	5.46	5.61
	2	5.13	5.69	5.77	5.49	5.64
	3	4.97	5.62	5.70	5.44	5.59
	4	4.40	5.28	5.35	5.09	5.23
1999	1	4.54	5.00	5.07	4.82	4.95
	2	4.60	5.05	5.12	4.89	5.02
	3	4.82	5.44	5.52	5.25	5.39
	4	5.22	6.14	6.23	5.90	6.07
2000	1	5.72	6.11	6.19	5.91	6.08

For notes on conversions, see appendix 5.

APPENDIX 4: CBO METHODOLOGY FOR BUDGET SCORING

Budget Scoring for the Federal Family Education Loan Program

The Congressional Budget Office (CBO) estimates costs of legislation that affects federal spending and receipts and scores these costs against the CBO budget baseline for spending and receipts in the absence of new legislation. The baseline, or the base assumption against which changes to a program are scored, is the projected cost of a program under current law. Because student loans are classified as mandatory spending--an entitlement--changes to terms of student loan programs are subject to pay-as-you-go provisions. This means that changes must be cost-neutral--that is, a change that would increase government costs must be accompanied by revenue increases or offsetting spending cuts.

Costs for credit programs, such as student loans, are estimated under the terms of the Federal Credit Reform Act of 1990. The budget records all the costs and collections associated with a new loan on a present-value basis in the year the loan is obligated. The costs of all changes affecting outstanding loans are displayed in the year of enactment. Future years' cash flows--both dollars flowing from the government and receipts accruing to the government--are estimated over the life of the loans and discounted back to the current year.

In estimating the expected federal costs of a program change, CBO uses a model to simulate the variation in interest rates around the CBO's baseline forecast. For example, the model provides probabilities of how often and by how much the simulated rates might exceed the 8.25 percent interest rate cap for borrowers. These probabilities are then used in CBO's model of the student loan program to estimate changes in subsidy costs.

Example--1998 Reauthorization of the Higher Education Act (HEA)

At the time HEA reauthorization was being considered in 1998, the reference rate for lender yield on FFELP loans was the 91-day T-bill. However, this was scheduled to change to the rate on a 10-to-20-year Treasury bond on July 1, 1998.[1] The interest rate received by private lenders after that date would be the interest rate on bonds of comparable maturity plus 1.0 percentage point.[2] Borrowers would pay this same rate, but with a cap of 8.25 percent. To the extent that the yield to lenders exceeds the rate paid by borrowers, the federal government would pay lenders the difference, which is called a special allowance. In addition, the federal government would pay the interest for student borrowers with subsidized loans while they are in school or in a period of grace

[1] This change was part of legislation passed in 1993 that, among other provisions, established the Direct Loan program.

[2] The CBO baseline assumed that the rate on bonds of comparable maturity is the 10-year bond rate. The administration uses a blended rate of 10-year and 20-year maturities.

or deferment, as it does currently. The scoring of the 1998 reauthorization was computed relative to the cost of loans under the then-current statutes.

When it was enacted in October 1998, the reauthorization act (P.L. 105-244) set the rate paid by student borrowers (for loans disbursed during the period October 1, 1998, until July 1, 2003) at the 91-day Treasury bill rate plus 1.7 percentage points while the borrower was in school, grace, or deferment and 2.3 percentage points when the borrower was in repayment. Lenders received the 91-day Treasury bill rate plus 2.2 percentage points while the borrower was in school, grace, or deferment and 2.8 percentage points when the borrower was in repayment. The federal government paid lenders the difference between these two rates, termed a special allowance payment. Because the borrower rate was adjusted annually and the lender rate quarterly, this difference was not always equal to the apparent 50 basis point difference between the two markups over the Treasury bill. The cap of 8.25 percent on borrowers' rates was retained. The borrower interest rate and lender yield are still scheduled to revert to the 10-to-20-year Treasury bond rate plus 1.0 percentage point in July 2003.

CBO estimated that the changes in borrower interest rates and lender yields (from the 10-to-20-year Treasury bond rate that would have otherwise gone into effect in July 1998 to the new formula) would increase federal costs over the 1999-2003 period by about $3.3 billion relative to then-current law. The increased cost was associated with the new special allowance payment as well as the increased exposure of the federal government to interest rate subsidies when rates rise sufficiently to cause the borrowers' interest rates to be constrained by the statutory caps. Moreover, the 91-day Treasury bill is a more volatile instrument than the 10-year bond rate.

Scoring of Proposals for Study Group

Reauthorization extended the use of the 91-day T-bill as the reference rate, and the change to the 10-to-20 year instrument was postponed until July 1, 2003. Thus, during 1999, changes for proposed for the future were score differently based on the year the loan was assumed to originate.

Loans made through June 30, 2003 were scored relative to the 91-day Treasury bill, and loans made after July 1, 2003 were scored relative to the 10-to-20 year instrument.

In August 1999, CBO presented the Study Group with estimates of the cost of changing to a formula based on either LIBOR or CP to determine lender yield. The estimates were for the period beginning July 1, 2003, so the cost estimates were made relative to the cost using the 10-to-20-year rate plus 1.0 percentage point, which will be in effect in those years under current legislation. Also, the estimates included costs only for subsidized Stafford loans. These are the

largest component of FFELP, but results for unsubsidized Stafford, consolidation, and parent loans might have been different.

The first estimate was simply the cost of retaining the 1998 HEA formula--a lender yield of 91-day T-bill plus 2.8 percentage points for borrowers in repayment. This entailed some additional budgetary costs relative to the 10-to-20-year rate plus 1.0 percentage point. The other 4 estimates--based on indexes of 1-month CP, 3-month CP, 1-month LIBOR, and 3-month LIBOR--set the markup over each index rate so that the lender yield would be held constant with the T-bill-based formula. Use of each of the four indexes resulted in costs that were higher than the cost of retaining the T-bill-based formula.

Of the four alternative indexes, the 3-month CP index had the lowest additional cost. Although the estimates were for loans made after July 1, 2003, the magnitude of the results suggested the 3-month CP index would be less expensive for any time period. Actual dollar costs would vary depending on the time period chosen, because the estimates are sensitive to such factors as loan volume, which tends to increase each year.

Change in Lender Yield on Student Loans due to H.R. 1180

In the fall of 1999, an amendment to H.R. 1180[3] changed the lender yield on new loans issued between January 1, 2000, and July 1, 2003. Under this act, yields are based on the 3-month commercial paper rate. For student loans, the yield becomes the 3-month commercial paper rate plus 1.74 percentage points (while the borrower is in school, grace, or deferment) or 2.34 percentage points (while the borrower is repaying the loan). The Lender yield on parent and consolidated loans are the 3-month commercial paper rate plus 2.64 percentage points. H.R. 1180 left the existing interest rate structure for borrowers unchanged.

Under the then-current CBO forecast of interest rates, the yields set by H.R. 1180 using the commercial paper rate were estimated to differ slightly from the yields under then-current law, based on the 91-day Treasury bill rate. CBO estimated that this change would have a negligible federal cost in 2000, but it would save $20 million over the 2001-2003 period. Over this time period, approximately $80 billion in new loans will be issued by private lenders.

[3] Subsequently enacted as P.L. 106-170 on December 17, 1999.

APPENDIX 5: DATA AND CALCULATIONS FOR THE VOLATILITY ANALYSIS IN CHAPTER 2

The data series used in chapter 2 (and appendix 5) were obtained from the Haver Analytics data base using a monthly frequency. All interest rates were converted to a bond (or coupon) equivalent basis (with a 365-day year).

Both Treasury bill rates and commercial paper are quoted on a bank discount basis, requiring adjustment both for the assumed days of compounding in the year and for the change from par (100) to discount price in the calculation of the rate. The formula is

Bond equivalent rate =
[365 x (discount rate/100)] / [360-(91 x (discount rate/100))]

The three-month Treasury bill rate is the average of rates at the regular weekly auctions that occurred during the month, converted as just noted.

The commercial paper rates, for one-month and three-month maturities, are for AA-rated financial commercial paper, converted as noted above. These are rates released by the Federal Reserve Board, based on data they receive from the Depository Trust Corporation.

The three-month London Interbank Offer Rate is the rate on three-month dollar interbank placements determined at the daily fixing by the British Bankers' Association. The rate is converted from a 360-day basis to a 365-day basis.

APPENDIX 6: DERIVATION OF COMMERCIAL PAPER INTEREST RATES (FROM FEDERAL RESERVE BOARD OF GOVERNORS)

The following material comes from the Federal Reserve Board's Board of Governors web site:

Commercial paper consists of short-term, unsecured promissary notes issued primarily by corporations. Maturities range up to 270 days but average about 30 days. Many companies use commercial paper to raise cash needed for current transactions, and many find it to be a lower-cost alternative to bank loans.

The Federal Reserve Board's information on commercial paper (CP) is derived from data supplied by The Depository Trust Company (DTC), a national clearinghouse for the settlement of securities trades and a custodian for securities. DTC performs these functions for almost all activity in the domestic CP market.

Data on rates for CP are updated daily with a one-day lag. Data on CP outstanding are available as of the close of business each Wednesday and as of the last business day of the month; these data are also posted with a one-day lag.

The Federal Reserve Board disseminates its information on commercial paper primarily through its World Wide Web site. In addition, the Board publishes one-, two-, and three-month rates on AA nonfinancial and AA financial CP weekly in its H.15 Statistical Release and monthly in its G.13 Statistical Release. It also publishes some data on CP outstanding in the monthly *Federal Reserve Bulletin*.

To calculate CP interest rate indexes, the Federal Reserve Board uses DTC's data for certain trades to estimate a relation between interest rates on the traded securities and their maturities. In this calculation, the trades represent sales of CP by dealers or direct issuers to investors (that is, the offer side) and are weighted according to the face value of the CP so that larger trades have a greater effect on the resulting index. With the relation between interest rates and maturities established, the reported interest rates represent the estimated interest rates for the specified maturities.

Interest rates calculated through the process described above are a statistical aggregation of numerous data reflecting many trades for different issuers, maturities, and so forth. Accordingly, the reported interest rates purport to reflect activity in certain segments of the market, but they may not equal interest rates for any specific trade. As with other statistical processes, this one is designed to minimize the difference between the interest rates at which actual trades occur and the estimated interest rates.

CP trades included in the calculation are chosen according to the specifications listed in table 7.1 below. Data to assess CP trades relative to these criteria are updated daily from numerous publicly available sources. SIC code classifications are taken from the SEC Directory of Companies Required to File Annual Reports with the Securities and Exchange Commission. When an issuer's primary SIC code is not reported in the SEC directory, the primary SIC code reported in the issuer's financial reports is used; otherwise, SIC codes are determined upon consultation with the Office of Management and Budget's Standard Industrial Classification Manual or its Supplement.

For a discussion of econometric techniques for fitting the term structure of interest rates, including bibliographic information, see, for example, Mark Fisher, Douglas Nychka, and David Zervos, "Fitting the Term Structure of Interest Rates with Smoothing Splines," Finance and Economics Discussion Series 95-1 (Board of Governors of the Federal Reserve System, January 1995).

Table 6.1: Criteria for Calculating CP Interest Rate Indexes

Item	AA financial	AA nonfinancial	A2/P2 nonfinancial
Short-term credit rating	Programs with at least one "1" or "1+" rating but no ratings other than "1"		Programs with at least one "2" rating but no ratings other than "2"
Long-term credit rating	Programs with at least one "AA" rating, including split-rated issuers		Programs with at least one "A" or "BBB"/"Baa" rating, including split-rated issuers, but none with any ratings outside the "A"-"BBB"/"Baa" range
Credit rating agencies considered	Duff & Phelps Credit Rating Co., Fitch Investors Service, Moody's Investors Service, and Standard & Poor's		
Credit rating reviews	Programs that would be included in an index calculation are excluded when (1) the issuer's credit ratings are under review and (2) a one-notch or downgrade would violate either credit rating criterion		
SEC registration types	Both traditional programs (3(a)3) and private placements (4(2)) are included		
Placement	Both dealer-placed and directly placed programs are included		
Industries included (primary SIC codes)	6000-6999, excluding 6189 (asset-backed CP) and 6200-6299 (security broker/dealers)	100-5999, 7000-9999	100-5999, 7000-9999
Excluded trades	Foreign and credit-enhanced programs; secondary, repurchase agreement/financing, and interest-at-maturity trades		
Weights	Trades are weighted by their face values		

Source for entire appendix: http://www.bog.frb.fed.us/releases/CP/about.htm

APPENDIX 7: THE BRITISH BANKERS ASSOCIATION (BBA) AND THE LIBOR FIXING

The BBA sets the most widely quoted LIBOR rate. Background on the BBA and the methodology of the rate fixing is explained below.[1]

Evolution of the British Bankers' Association

The British Bankers' Association was formed in 1919, but its current role and structure dates from 1972 when membership was extended to the foreign banks in London. Until then, membership had been restricted to British commercial banks in Great Britain and the Commonwealth. The British accepting houses or merchant banks, previously absent, also elected to join at this time.

These changes created a broadly based banking association, representative of all banks in the UK and able, as such, to participate in the European Bankers' Federation. Based in Brussels, the Federation is recognized by the EC Commission, the Council and the European Parliament as the representative body for the community's commercial banking sector.

The BBA is the trade association for the banking industry in the UK. Its members are organizations authorized under the Banking Act by the Financial Services Authority to take deposits from the public in the UK and to use a banking name. The membership currently includes all major banks and numbers some 330. Well over three-quarters of them are foreign owned or foreign controlled although, in local asset terms, British-owned banks predominate.

As a trade association the BBA is the forum in which the banks in the UK seek common ground to enable the banking industry as a whole to speak collectively on matters of common interest and of public policy.

Being the voice of the banks in the UK the British Bankers' Association communicates the industry's views to the British government, to the Bank of England and City regulators, to the press, to opinion formers, to the institutions of the EC and to governments and regulators around the world.

Since its formation the work of the BBA ran partly in parallel and shared a secretariat jointly with the Committee of London Clearing Bankers (CLCB), the Chairman of which was also the President of the BBA. The two organizations diverged, however, in 1975. The BBA obtained its own Secretary General and

[1] This material comes from the web site of the British Bankers Association (www.bankfacts.org.uk1).

support staff. The office of President was no longer linked to the Chairmanship of the CLCB.

Following the transfer of responsibility for the Bankers' Clearing House and for other forms of money transmission matters from the CLCB to the newly established Association for Payment Clearing Services (APACS) in 1985, the dividing line between the work of the BBA and the CLCB (latterly re-named the Committee of London and Scottish Bankers (CLSB)) had become blurred.

It was recognized that the BBA had become increasingly acknowledged as the voice of the banking industry in the UK and that there was no longer any justification for the continued existence of another body that spoke only for a small number of banks. In 1991 it was decided that the CLSB should be wound up and its work absorbed with that of the BBA.

The LIBOR System

The British Bankers' Association (BBA) LIBOR is the primary benchmark used by banks, securities houses and investors to fix the cost of borrowing in the money, derivatives and capital markets around the world.

BBA LIBOR fixing evolved in the early 1980's with the growth of syndicated lending and early developments in the derivatives markets. Since then it has assumed an increasing importance as well over 20% of all international bank lending and more than 30% of all FX transactions take place in London.

BBA LIBOR is now used to calculate the interest rates applying to a wide range of contracts including OTC instruments such as swaps, loan agreements, FRNs, FRAs and Exchange Traded Short Term Interest Rate contracts traded on LIFFE, CME and DTB amongst others.

BBA LIBOR is fixed for the following currencies: GBP, CAD, NLG, XEU, USD, AUD, ITL, YEN, DEM, PTE, CHF, FRF & ESP. All currencies are fixed on a spot basis on each London Business Day apart from Sterling, which is fixed for same day value.

LIBOR is provided as a free service to the market by the BBA. There is no comprehensive list of all its users or uses, but it is generally acknowledged as a truly international benchmark. BBA LIBOR is published simultaneously on more than 300,000 screens throughout the world, being distributed by, amongst others, the following major information vendors: ADP, Datastream, Reuters, Bloomberg, Nomura Research, S&P Comstock, Bridge Telerate, and Quick. Bridge Telerate manages the fixing process on behalf of the BBA, collecting data from Contributor Panel Banks, applying quality control tests to it and calculating the Fixing, releasing it just before noon, London time.

In the July 1998 The Banker survey of the top 1000 banks. 11 of the BBA LIBOR banks are in the top 20 world banks. Furthermore, 9 of the BBA LIBOR banks are in the May 1998 Euromoney FX poll's top 10 indicating that the euro BBA LIBOR Panel banks are amongst the most active in the world in the wholesale interbank market.

The BBA LIBOR Fixing

BBA LIBOR is the BBA fixing of the London Inter-bank Offered Rate. It is based on offered inter-bank deposit rates contributed in accordance with the Instructions to BBA LIBOR Contributor Banks.

The BBA will fix BBA LIBOR and its decision shall be final. The BBA consults on the BBA LIBOR rate fixing process with the BBA LIBOR Steering Group. The BBA LIBOR Steering Group comprises leading market practitioners active in the inter-bank money markets in London.

BBA LIBOR is fixed on behalf of the BBA by the Designated Distributor and the rates made available simultaneously via a number of different information providers.

Contributor Panels shall comprise at least 8 Contributor Banks. Contributor Panels will broadly reflect the balance of activity in the inter-bank deposit market. Individual Contributor Banks are selected by the BBA's FX & Money Markets Advisory Panel after private nomination and discussions with the Steering Group, on the basis of reputation, scale of activity in the London market and perceived expertise in the currency concerned, and giving due consideration to credit standing.

The BBA, in consultation with the BBA LIBOR Steering Group, will review the composition of the Contributor Panels at least annually.

Contributed rates will be ranked in order and only the middle two quartiles averaged arithmetically. Such average rate will be the BBA LIBOR Fixing for that particular currency, maturity and fixing date. Individual Contributor Panel Bank rates will be released shortly after publication of the average rate.

The BBA, in consultation with the BBA LIBOR Steering Group, will review the BBA LIBOR Fixing process from time to time and may alter the calculation methodology after due consideration and proper notification of the planned changes.

In the event that it is not possible to conduct the BBA LIBOR Fixing in the usual way, the BBA, in consultation with Contributor Banks, the BBA LIBOR Steering

Group and other market practitioners, will use its best efforts to set a substitute rate. This will be the BBA LIBOR Fixing for the currency, maturity and fixing date in question. Such substitute fixing will be communicated to the market in a timely fashion.

If an individual Contributor Bank ceases to comply with the spirit of this Definition or the Instructions to BBA LIBOR Contributor Banks, the BBA, in consultation with the BBA LIBOR Steering Group, may issue a warning requiring the Contributor Bank to remedy the situation or, at its sole discretion, exclude the Bank from the Contributor Panel.

If an individual Contributor Bank ceases to qualify for Panel membership the BBA, in consultation with the BBA LIBOR Steering Group, will select a replacement as soon as possible and communicate the substitution to the market in a timely fashion.

Instructions to BBA LIBOR Contributor Banks.

An individual BBA LIBOR Contributor Panel Bank will contribute the rate at which it could borrow funds, were it to do so by asking for and then accepting inter-bank offers in reasonable market size just prior to 1100.

Rates shall be contributed for currencies, maturities and fixing dates and according to the quotation conventions.

Contributor Banks shall input their rate without reference to rates contributed by other Contributor Banks.

Rates shall be for deposits: made in the London market in reasonable market size; that are simple and unsecured; governed by the laws of England and Wales; where the parties are subject to the jurisdiction of the courts of England and Wales.

Maturity dates for the deposits shall be subject to the ISDA Modified Following Business Day convention, which states that if the maturity date of a deposit falls on a day that is not a Business Day the maturity date shall be the first following day that is a Business Day, unless that day falls in the next calendar month, in which case the maturity date will be the first preceding day that is a Business Day.

Rates shall be contributed in decimal to at least two decimal places but no more than five.

Contributors Banks will input their rates to the Designated Distributor between 1100hrs and 1110hrs, London time.

The Designated Distributor will endeavor to identify and arrange for the correction of manifest errors in rates input by individual Contributor Banks prior to 1130.

The Designated Distributor will publish the average rate and individual Contributor Banks' rates at or around 1130hrs London time.

Remaining manifest errors may be corrected over the next 30 minutes. The Designated Distributor then will make any necessary adjustments to the average rate and publish it as the BBA LIBOR Fixing at 1200hr.

APPENDIX 8: INTERVIEWS OF FFELP INDUSTRY REPRESENTATIVES

In order to learn more about trends in financing student loans made under the FFELP, we interviewed representatives of lenders, secondary markets, and investment firms (generally meaning firms involved in FFELP only indirectly or as intermediaries, not lenders in the program) during the summer of 1999. GAO staff conducted these, accompanied in some cases by staff from the other government agencies that were part of the study group. This appendix summarizes what the representatives told us and on what points they disagreed. We also interviewed officials at several schools and trade groups related to FFELP, but because their perspectives vary widely and we did not conduct many such interviews, we use their comments for background information rather than summarizing them here.

Overall Comments on Interest Rates

Our interviews indicated that LIBOR is the dominant index in most markets today. Many more instruments are traded today based on LIBOR than on T-bills. Its use for student loans would result in a more liquid market for any type of student loan transaction.

Student loan holders holding a T-bill-based instrument generally prefer to swap to a LIBOR rate to match their funding costs, which are primarily LIBOR-driven. However, some interviewees said that even before the October 1998 "flight to quality," swaps were difficult to arrange, especially at the volume needed to offset student loan holdings. Several mentioned that the spot difference between the T-bill and LIBOR has come back down since late 1998 but that swap rates have remained relatively high as "the market remembers what happened last fall." One investment firm interviewee said that the T-bill swap with LIBOR historically was liquid in the 1-year to 10-year term. It was one of several basis swaps available in the market. However since October 1998, the market for this swap has been very illiquid and "gappy" as the flight to quality lowered T-bill rates and increased the costs of swapping out of T-bills into LIBOR.

Lenders' Portfolio Strategies

Several different strategies for holding and hedging portfolios exist and each strategy can affect the risks undertaken and returns earned by the lender.

Hedging By Using Swaps

Interviewees generally agreed that there's no natural counterparty for a T-bill-LIBOR swap (and no natural investor for variable-rate T-bill-based assets). The market for T-bill-based securities is thin because of the need to swap into LIBOR. The price that would be required makes swaps unfeasible. Quoted swap rates can be higher or lower than the Treasury-to-Eurodollar (TED) spread at any given time. The TED spread is based on current conditions, but swap rates depend more on anticipated future rates.

Any price quotes one observes for swaps, such as those published by Bloomberg's, are generally for a $25 million transaction. There's no guarantee you could get a posted rate for any particular large swap. How much you could swap at one time depends on market conditions, but it becomes problematic after $150 million and probably impossible beyond $400-$450 million in the best of times. One interviewee told us that if swaps were widely available at the quoted rates, lenders would not be concerned about the T-bill as an index.

T-bills are an unnatural index for lender yield because of special characteristics of the instrument. For example, the supply is driven in part by the Treasury's borrowing needs. Some fear that a reduced supply of T-bills because of future budget surpluses will drive T-bill prices up and yields down--one specifically mentioned the fact that Treasury has begun buying back securities in some maturity ranges. Also, when Sallie Mae, the largest issuer of T-bill-indexed securities, enters the market, everyone knows it, and this affects the swap price.

Swaps are complicated by the fact that the remaining balance on a pool of student loans is not determined by a fixed schedule, such as a normal set of bullet bonds. To deal with this variable amortization requires a swap that includes adjustments of amortization of the student loan pool, introducing another level of risk into the swapping arrangement. Swaps can be made on a balance-guaranteed basis, balance-protected basis or on a fixed amortization basis. The balance guaranteed approach involves recomputing the notional balance each period, based on actual payments and prepayments. The balance protected approach includes an agreed-upon schedule in advance of the deal about how the notional amount will decline over the lifetime of the deal.

One lender told us its biggest business risk is long term funding for 1 year. They prefer to use swaps and spreads to stabilize earnings and fund out to 2-3 years via swaps. But using swaps affects current income. For example, at the time of the interview, the current LIBOR spot rate was 40 b.p. above the T-bill, and the forward swap rate was 70 b.p. higher i.e. they were paying 30 b.p. to lock in a spread. This means the lender fund short although it would prefer to fund long. Given the high costs, fully swapping to hedge basis risk is too expensive given the lenders' earnings targets. Another agreed they cannot afford to be fully swapped. Thus they accept the basis risk implied by partial swapping. Beyond a

term of 2-3 years, basis swap premiums become prohibitive. Another told us this has been especially true in recent years, compared to 1996, when lenders had better success getting swaps for the volume they required. One lender that does not swap told us that it expected profits were higher if they simply bear the basis risk.

Securitizing

Asset-backed securitizations for student loans started in mid-1990s; they have been used in mortgages and other loan industries, such as credit cards, for much longer. The student loan securitization market dried up in late 1998 when the LIBOR and T-bill rates diverged. New issues have resumed in 1999.

If the creator of the securitization wants to issue LIBOR-based securities to please investors, there will be a cost to swap out of variable T-bill based rates. If the creator of the securitization doesn't swap out of T-bill based student loans, the final investor will bear the costs of swapping out of T-bill based assets.

Two structures are possible for securitization trusts--a "master (or revolving) trust" and an "amortizing trust." Credit card securitizations tend to be revolving trusts. At first, the trust might include $1 billion of receivables. As credit card balances are paid down, new receivables are put into the trust. In an amortizing trust, as balances are paid down, the trust shrinks, because new loans are not put in to replace those paid off. With student loan trusts, loan consolidations, deferments, and serialization of loans (new loans for borrowers whose prior loans are already in the trust) complicate matters. Another difficulty is really determining what is meant by prepayment risk because it includes consolidations, voluntary prepayments, guarantee payments due to default and extension risk (slower than expected prepayments).

Only Sallie Mae has tried to develop a market for T-bill-based securities, and they have had little success. With a T-bill-based security, the investor bears the interest rate risk if funding costs diverge from the T-bill-based return. Most other securitizers offer the investor LIBOR (or an auction rate), which means the securitizer must bear that risk. The securitizer can hedge either inside or outside of the securitization.

When a securitization is put together, credit rating agencies and investment firms negotiate the credit rating, and lawyers ensure that a bankruptcy-remote special purpose vehicle is created to ensure that the rating is based on the quality of the pool and not the financial strength of the creator of the pool.

Municipal agencies, in some sense, do something similar to a securitization when they offer their bond issues, although bond repayments may or may not be tied to repayments from a specific cohort of student loans.

One nonsecuritizer said that lenders securitize if they have a capital constraint (they don't) or to reduce earnings volatility. Securitization makes sense only if the firm can take advantage of some type of market leverage. Another nonsecuritizer said it decided the big risk was servicing when the trust department was the master servicer, which it would have been in a securitization. A third said its portfolio is not large enough to make securitization efficient, and in addition it does not take care of the main problem it faces--the mismatch between LIBOR and the T-bill. The lender would have to offer either T-bill securities (which investors would only take if they could find a reasonable swap) or LIBOR securities (which the lender could not afford to offer unless it found a reasonable swap for itself).

Securitizations are most effective if done on a large scale and repeatedly. Several who securitize said they did their first one to "test it out" or "get their feet wet." Several also said they try to put all loans into securitization, perhaps holding them on book while borrowers are in school and then securitizing when loans go into repayment. (This is the same strategy other lenders may use when selling loans on the secondary market.)

Other strategies--Lenders That Are Part of a Larger Holding Company

Some lenders fund themselves as stand-alone shops, but most we talked to are funded through a central corporate treasury. When funded in this way, some lender shops are charged some average rate that is the same as for other lines of business within the holding company, while other holding companies charge student lending shops a rate adjusted for the risk, term, and other characteristics of the student loan product. Most are evaluated based on earnings or net return (either return on assets or return on equity). This is more pressure than state secondary market institutions face, although the two types of institutions are both evaluated by credit ratings agencies when they issue new securities to ensure their liabilities or asset-backed securitizations are creditworthy. Most say that increasing market share is either an explicit goal or at least a means of attaining another goal, such as increased net returns.

For those we talked to, the student loan operations within banks do not hedge within their own shops. Any hedging is done at the corporate level. One lender, for whom student loans are a small part of a large organization, mentioned that TED spread changes and the fall 1998 crisis did not affect it directly. They sell most loans soon after origination rather than holding large portfolio of loans over a long period; in addition, swapping and other forms of hedging are done at the corporate level, not at the level of the student loan group.

Marketing for student loans is aimed at schools, not borrowers. To generate new volume, lenders try to get themselves included on a school's preferred lender list.

Other Developments in the FFELP Industry

Many fewer lenders participate in the program compared to 5 or 10 years ago--Department of Education data show the number has fallen by several thousand. Some have dropped out of the program; others have been merged or bought up by larger institutions. However, only a few of the large lenders have dropped out.

Consolidation among student loan servicers has been even more pronounced. Only a half-dozen or so servicers now dominate the market. Other lenders generally contract with one (or more) of these dominant servicers for their loans. Servicing requirements may vary by guarantor on the loan. One lender told us it services its own loans that are guaranteed by the guarantor in their state, with whom it deals most regularly, but it contracts out servicing if the loan is with any other guarantor. Outsourcing servicing with one of the well-known servicers also makes a lender's loans look better for either secondary market sale or securitization (ratings companies look more favorably on the portfolio). One interviewee noted that because securitization has made funding costs more equal across lenders, servicing cost differences are now the main variable factor in profitability, rather than funding cost differences.

The big risk (other than interest-rate risk) in student loans is not the credit risk per se, which is the major risk for other types of loans. Instead, it is servicing risk, since improper servicing can void the credit guarantees provided by the guarantee agencies. Given the importance of servicing, the servicer for student loans doesn't usually change even if ownership of the loan does. By keeping the same servicer during origination and later servicing, the owner of the loans knows who made any mistake that cost him his guarantee. One secondary market lender told us that it will bid slightly more to purchase a portfolio of loans if it already have a servicing contract in place with the portfolio's servicer. If, on the other hand, it would need to develop a new servicing relationship, it might build that cost into the bid and offer a lower price. Implicit in this latter strategy was the idea that purchasing the loans and then simply switching them to a servicer it already worked with was not an option.

Interviewees were mixed on the possibility of servicing student loans in the same centers in which lenders might service credit card or other operations. Some thought economies of scale or scope could be exploited, while others thought student loans are so unique that the differences between the products overcame any potential advantage achieved by combining operations.

Servicing costs range widely, from somewhat under 1 percent to somewhat over 1 percent of a portfolio. One estimated range was 65 to 150 basis points; another interviewee told us that 100 basis points, or slightly less, was the usual ballpark estimate of the average; a third said 100 to 135 basis points. Because funding costs are generally about 200 basis points below the lender yield, a

variation of 35 basis points in servicing costs has a high relative impact on profitability.

Up-front discounts for borrowers on the 1-percent guaranty fee began several years ago. The general trend has been driven by national guaranty agencies looking to expand their portfolios and state-based entities looking to protect portfolios from this expansion. (For both guaranty agencies and lenders, volume is important, because fixed costs of participation are relatively high and need to be spread over as large a pool as possible.) Several interviewees mentioned that once a few agencies began discounting, most of the others felt compelled to do so as well or face a big loss in market share.

Interviewees also mentioned the effect of the 1998 Higher Education Act reauthorization and the anticipated recall of more guaranty agency reserves. In their view, agencies decided to give money back to students before they lost it to the federal government. In one view, discounting is "prepaying" that money back to the government. (The 1998 reauthorization also established two components of guaranty agency funds--an operating fund and a federal guarantee reserve fund--and designated which dollars could go into each and what payments could be made from each.) Several interviewees told us this discounting would not be sustainable as guaranty agency managed federal funds were depleted--some thought it might last for a matter of months, while others thought that stronger agencies could hold out for a year or two.

Although guaranty fee discounts have been around for a few years, discounts on the 3-percent origination fee (sometimes 1 percentage point of this fee, sometimes the full 3 percent) are more recent. Some of these discounts are offered by state secondary markets, and banks that originate loans and have forward purchase agreements with secondary markets will generally offer their borrowers the terms that the secondary market offers. Back-end discounts, whereby borrowers' interest rates might go down if they make their first 36 or 48 payments in a timely manner, have also become common.

Competition from Direct Loans (DL) is a factor. The reduction of DL up-front fees has not caused schools to switch to DL but may have partially arrested a switch away from DL. One interviewee also mentioned that, although lenders and other participants had a good sense of how default, FFELP consolidation, and other events might affect a portfolio over time, the consolidation of FFELP loans into a DL consolidation loan "added a new wrinkle" and was less predictable.

Tax-exempt funding has become less prevalent in recent years for several reasons. One is that federal rules were put in place capping the amount available in each state, and student loan authorities must compete with others in the state (road and school construction, for example) for an allocation under the cap. Another reason may be that state-designated secondary markets have

begun to operate more outside their home state, and they cannot use tax-exempt funding for these operations.

There are some similarities between securitizations and bond sales by state-designated secondary markets--cash flows and evaluations by credit ratings agencies are similar.

Growth of Alternative (Private/Nonfederal) Loans

Alternative loans have grown rapidly beginning 6 to 8 years ago. They primarily go to students at 4-year schools and higher tuition schools; thus, they go to borrowers who are attractive for a portfolio. (At first, they went primarily to graduate students, but now they're going to undergraduates as well.) Alternative loans are not federally guaranteed, but lenders generally insure them using private insurers. These loans can be included in securitizations, but most lenders do not do so.

APPENDIX 9: SURVEYS OF LENDERS AND SECONDARY MARKET INSTITUTIONS

During the Spring and Summer of 1999, we surveyed a limited number of lenders and secondary market institutions, and this appendix discusses the sample and results. Survey questions were reviewed by study group members and modified to address their concerns; GAO staff sent out the survey and compiled the results.

Sample for Surveys

We asked the Education Finance Council (EFC) to coordinate data gathering for state secondary markets (hereafter known as the EFC sub-sample) and the Consumers Bankers Association (CBA) to coordinate data gathering for other student loan lenders/holders (hereafter known as the CBA sub-sample).

Each group sent out surveys to the institutions on the study group and a small number of other institutions, of which we selected some and EFC and CBA selected others. We tried to include both large and small institutions in both groups, but the sample is not statistically representative of the population represented by either group.

We received 24 usable survey responses.[1] The institutions that responded held well over 50 percent of Federal Family Education Loan Program (FFELP) loans held as of September 30, 1997. According to EFC, the 12 respondents in the EFC subsample held over 45 percent of EFC-member state secondary market loans. Based on Department of Education fiscal- year-end-1997 data, the 12 respondents in the CBA sub-sample held over 66 percent of other student loan lender/holder loans.

Results for CBA Subsample

Nine of the 12 respondents held more than $1 billion on book at FYE 1998. Eight of them originated more than $500 million in loans in 1998.

Only one CBA institution, one of the smaller ones in the sample, was primarily deposit-based (at 65%; no other had more than 14% of loans funded by deposits). Of 11 respondents, 4 had 100% LIBOR-based funding, 2 others were majority LIBOR-based, and 2 were 30%-50% LIBOR. Depending on the year, 3

[1] We received 27 responses, but 3 of the 27 "respondents" said they had dropped out of the student loan business, so data are available on 24 respondents (or fewer, depending on the question).

or 4 of the 11 had some T-bill-based funding, and only 1 respondent (and for that respondent, for only 1 of the 3 years) had more than 50% T-bill-based funding.

Only four of 12 institutions hedge against their student loans, but they were 4 of the 5 largest in our sample, based on reported 1998 holdings. These lenders reported the term of the hedge as either less than 1 year or 1-3 years. From 1997 to 1998, the percentage hedged went up for one, down for another, and remained constant for the other 2.

Five of the 12 respondents had done some type of securitization. Of these, 3 had some securitization that was T-bill-based, and 4 had some LIBOR-based securities (with 2 using a mix of both). One of the 5 had a swap within their securitization; the other 4 did not.

All 11 who responded said they would prefer a 1-month or 3-month LIBOR basis, as opposed to the T-bill or commercial paper, for the index for their yield (8 preferred 1-month LIBOR, 3 preferred 3-month LIBOR).

Responses for EFC Subsample

EFC institutions we surveyed were smaller than institutions in the CBA subsample: 8 of the 12 held less than $1 billion on book at FYE 1998 (and 9 of 12 were under $1 billion in 1997). All 12 reported consistent growth of on-book holdings from 1996 to 1997 and 1997 to 1998--in the CBA subsample, on-book holdings sometimes fluctuated from year to year.

Of the 12 EFC institutions, 5 had some LIBOR-based funding in 1998 (but 2 of the 5 had only 1% LIBOR), and 3 had some T-bill-based funding. All 3 institutions with substantial LIBOR-based funding showed an increase in such funding over the 3 years; however, another institution had some LIBOR funding in 1996 and 1997 but none in 1998. All 12 had more than 50% "other" funding (non-T-bill, non-LIBOR; some tax-exempt for those that indicated what it was).

Only 1 of the 12 hedged what they held on book, and 1998 was the first year they hedged.

Only one had any type of securitization. This securitization was indexed to LIBOR, and it had a swap for some portion. In 1997 and 1998, the majority of this institution's securitized loans were held on book, while others had been moved off book.

Eight of the 12 said they preferred a LIBOR basis for the index (7 said 1-month, 1 said 3-month), two said T-bill, one said commercial paper, and one was indifferent between LIBOR and T-bill.

APPENDIX 10: TREASURY DEPARTMENT SYNTHETIC SWAP MODEL TO ESTIMATE SWAP RATES

The following is a brief description of the estimation of the swap spread for a swap that could be used to hedge the basis risk of a holder of a guaranteed student loan.[1] In the Federal Financial Education Loan Program (FFELP), guaranteed loans pay the holder a return (comprised of payments from the student borrower plus Special Assistance Payments from the government) that until recently was indexed to the three-month Treasury bill. As described in chapter IV of this report, holders of FFELP loans whose cost of funds is LIBOR-based, or tracks closely with LIBOR, face interest-rate risk (basis risk) because of the mismatch between their returns and their cost of funds. This risk may be removed, at a cost, with a basis-to-basis swap. The calculations show that the estimated swap cost widened substantially during the "flight to quality" in the later months of 1998 and has not returned to the earlier level.

For each date, the model first estimates two variable-for-fixed-rate swap curves (swap rates by term to maturity) and then combines them to arrive at a basis swap curve. Initially, the model assumes 100% efficiency in executing trades (no cash reserves and no dealers' fees). The first step is to calculate the implied yield curve for LIBOR from the LIBOR futures rates quoted in the *Wall Street Journal*. Holders of FFELP loans who have a cost of funds that is based on LIBOR may lock into a fixed rate by selling LIBOR futures. The second step is to obtain the Treasury yield curve published by the Federal Reserve (implied discount factors and Treasury forward rates are calculated). Finally, the two curves are combined, and a 15 basis point adjustment is made.[2] This methodology is applied repeatedly over time to generate a five-and-half year history of estimated swap costs.

Figure 10.1 shows the estimated swap costs, and figure 10.2 presents the two underlying variable-for-fixed-rate swap curves. For each variable-for-fixed-rate swap curve, the swap rate calculation is based on certain amortizing terms. The relevant swap is used to hedge a pool of student loans that amortizes over 10 years. The amortization assumption over the 10 years is based on amortization terms of an actual swap embedded in a student-loan-asset-backed security that was marketed in March 1999.

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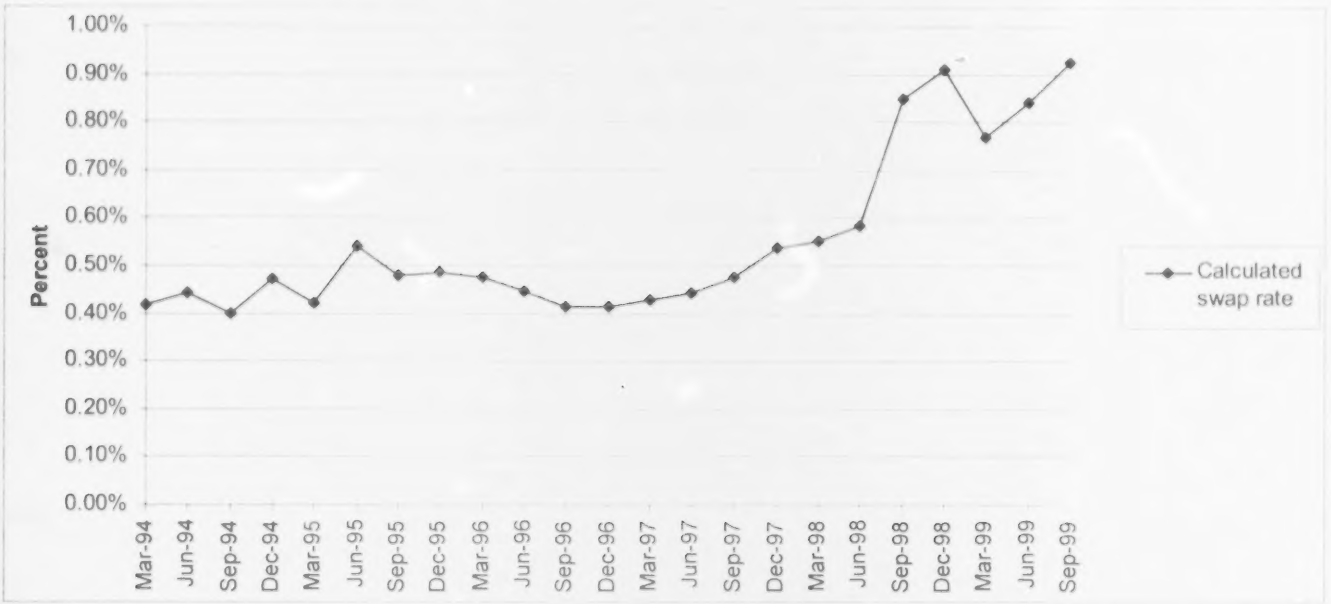
[1] This model was developed as part of the U.S. Treasury Department's oversight of Sallie Mae.

[2] Holders of the Treasury-indexed FFELP loans may lock into a fixed yield by separately executing the additional trades of investing in long-term Treasuries funded with short-term repurchase agreements (REPO) borrowings. The short-term borrowing is rolled over until the long-term Treasury investments mature. By providing Treasury securities as collateral, a borrower can borrow short-term at only slightly higher rates than those presented in the Treasury yield curves. Due to the premium over Treasury rates that is charged to borrowers in the REPO market, the Treasury yield curve overstates the effective fixed yield that REPO purchasers can lock into. The amount of the overstatement was estimated to be 15 basis points. The four figures each incorporate the 15 basis point adjustment to the treasury side swap. No such adjustment was deemed necessary for the LIBOR side swap.

As an alternative, figures 10.3 and 10.4 show the basis swap between LIBOR and Treasury--and the underlying estimated swaps between each of them and a fixed rate--for a 7-year bullet term (i.e. with no amortization) over the period since March 1994. The results of these bullet calculations may be more familiar to active participants in the swap market than figures 10.1 and 10.2.

Figure 10.1: Historical Basis Swap Rates (Amortizing)

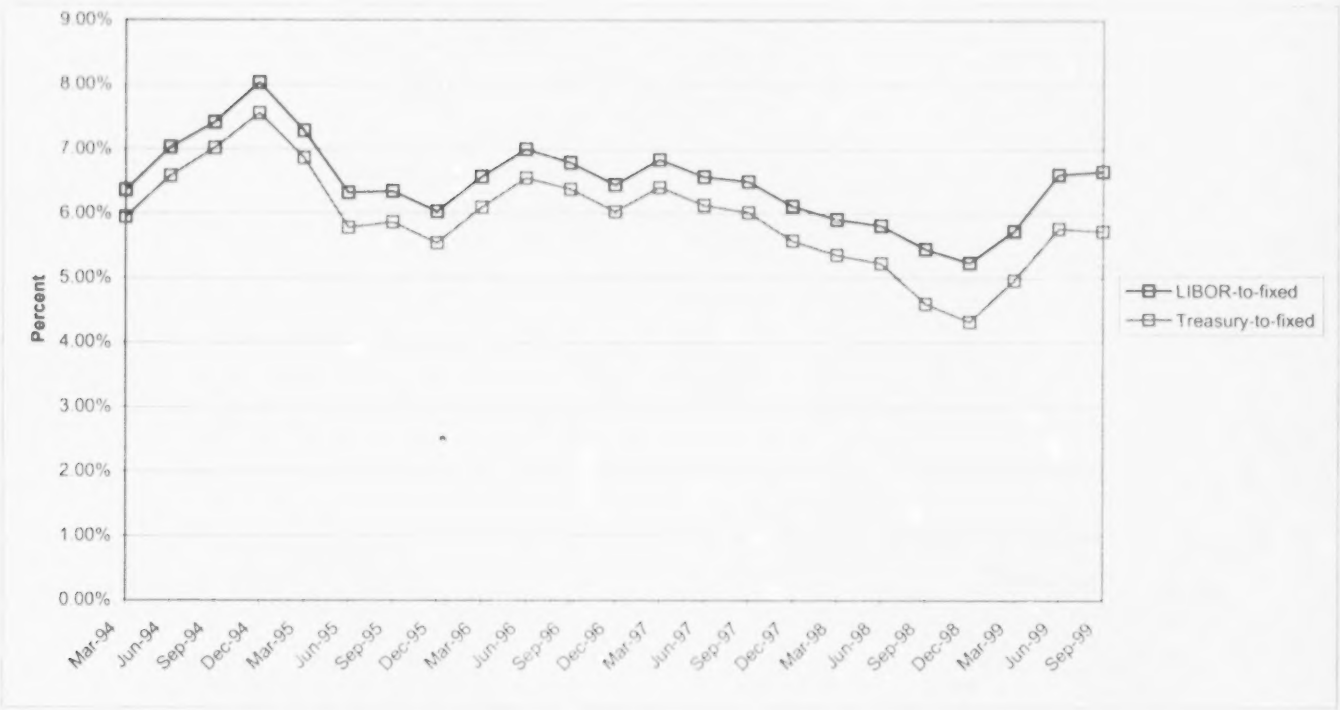
91-Day T-Bill vs. 3-Month LIBOR - 10 Year Amortizing Notional Term
(Notional Amortizing Schedule Based on an Actual Student Loan Portfolio Swap)



Notes. The base swap rate measurement methodology assumes 100% efficiency in executing trades involving the Treasury yield curve, excluding premiums charged borrowers in the Repo market. To adjust for this, .15% has been added to the calculated swap rate. The average rate for the period was .55%.

Figure 10.2: Historical LIBOR and Treasury Swap Rates (Amortizing)

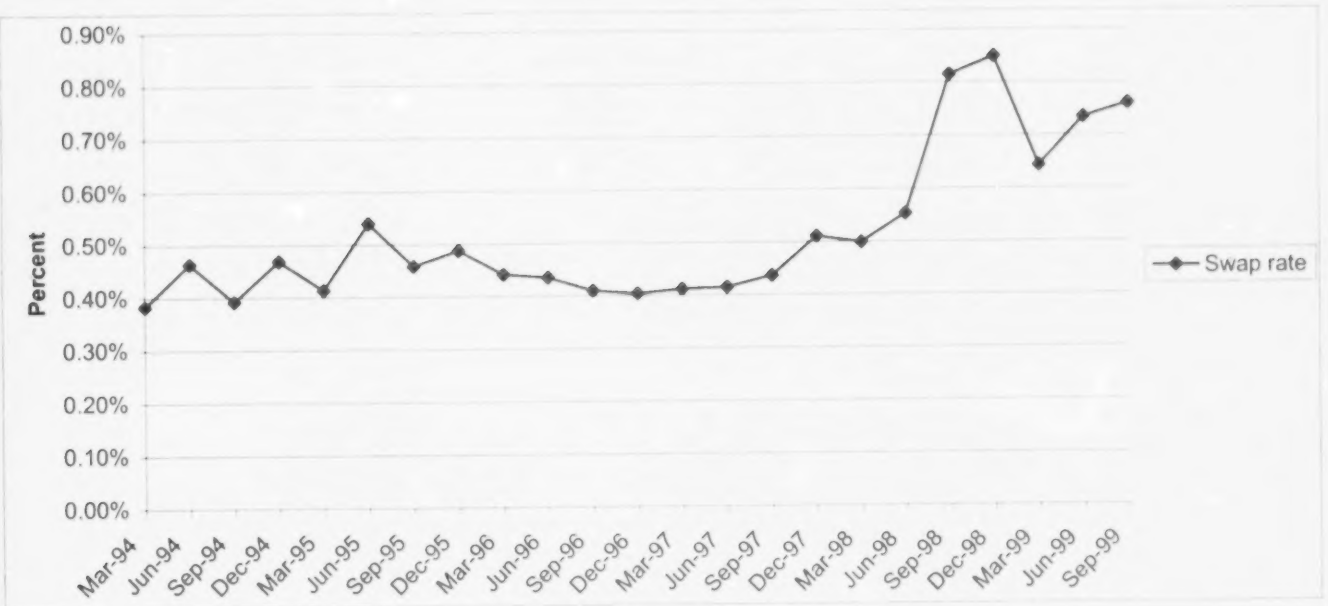
3-Month LIBOR vs. Qt. compounding fixed - 10 Year Amortizing Notional Term
91-Day T-Bill vs. Qt. compounding fixed - 10 Year Amortizing Notional Term



Notes. The base Treasury swap rate measurement methodology assumes 100% efficiency in executing trades involving the Treasury yield curve, excluding premiums charged borrowers in the Repo market. To adjust for this, .15% has been deducted from the fixed rate. The average rates for the period, for the LIBOR and Treasury swaps with a 10-year amortizing notional term, were 6.48% and 5.93%, respectively.

Figure 10.3: Historical Basis Swap Rates

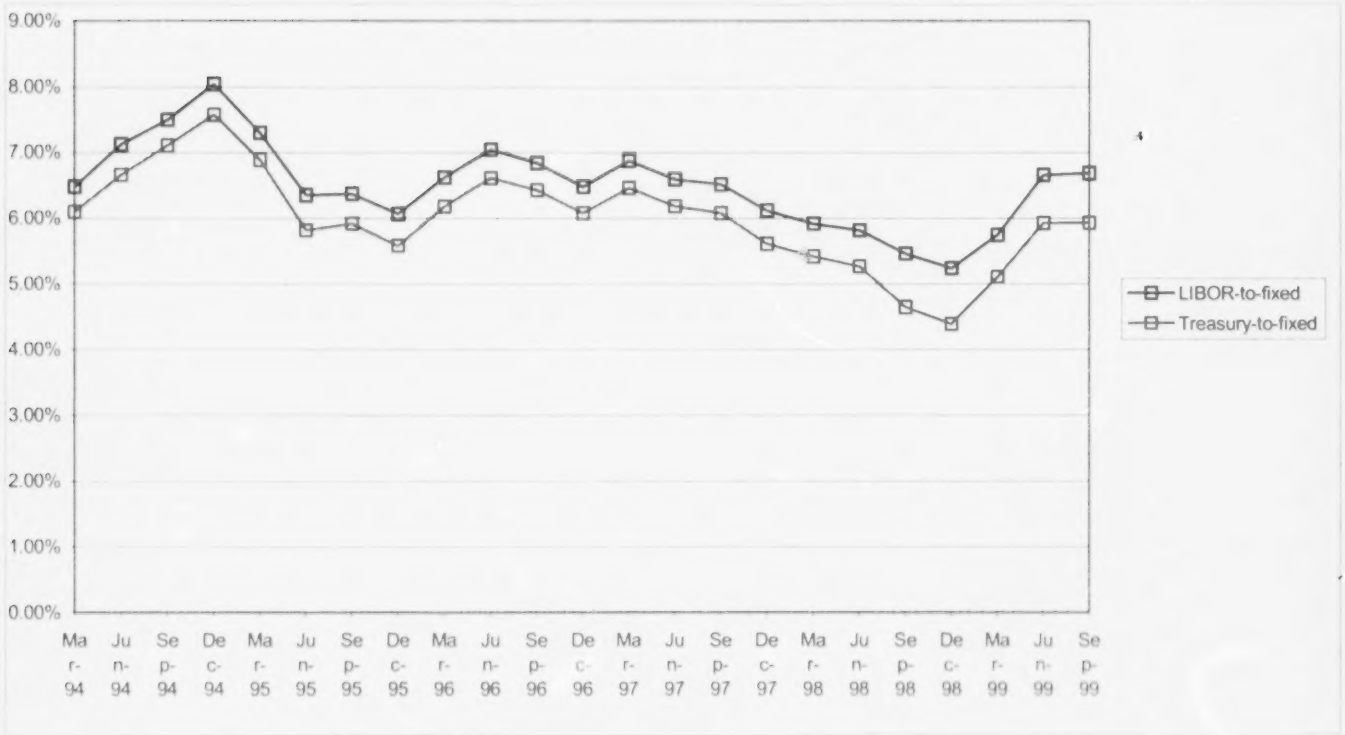
91-Day T-Bill vs. 3-Month LIBOR - 7 Year Bullet Term



Notes. The base swap rate measurement methodology assumes 100% efficiency in executing trades involving the Treasury yield curve, excluding premiums charged borrowers in the Repo market. To adjust for this, .15% has been added to the calculated swap rate. The average rate for the period was .52%.

Figure 10.4: Historical LIBOR and Treasury SWAP RATES

3-Month LIBOR vs. Qt. compounding fixed - 7 Year Bullet Notional Term
91-Day T-Bill vs. Qt. compounding fixed - 7 Year Bullet Notional Term



Notes. The base Treasury swap rate measurement methodology assumes 100% efficiency in executing trades involving the Treasury yield curve, excluding premiums charged borrowers in the Repo market. To adjust for this, .15% has been deducted from the fixed rate. The average rates for the period, for the LIBOR and Treasury swaps with a 7-year bullet notional term, were 6.51% and 5.99%, respectively.

APPENDIX 11: RECOMMENDATION OF THE FFELP INDUSTRY MEMBERS OF THE STUDY GROUP ON THE FEASIBILITY OF ALTERNATIVE FINANCIAL INSTRUMENTS FOR DETERMINING LENDER YIELD

(Note--This recommendation was made before the Congress passed legislation in November 1999 that changed lender yield to an index based on Commercial Paper.)

The Study Group on the Feasibility of Alternative Financial Instruments for Determining Lender Yields (the Group) has worked for several months to fulfill its mandate as set forth in Section 802 of the Higher Education Act. The Group's work has taken place in the context of legislative budget procedures that limit the scope of options that may be recommended by the Group. These constraints include projections of LIBOR, Commercial Paper and Treasury bill rates, estimates of Federal budget costs which include costs associated with the volatility of such rates, and budget costs associated with any change from the formula for lender yield scheduled to go into effect on July 1, 2003.

Recommendation

The FFELP industry members of the Group (FFELP Group) carefully examined the historical relationships between the 91-day T-bill, Commercial Paper and LIBOR. Based on this historical analysis and an outlook for continued moderate economic growth, low short-term interest rates and stable inflation, the FFELP Group concludes that the following alternative lender return formulas produce no additional cost to the government:

FFELP Group Recommended Conversion Formulas

30-day Commercial Paper plus 2.45%
90-day Commercial Paper plus 2.40%
1-month LIBOR plus 2.35%
3-month LIBOR plus 2.30%

Note: Conversion assumes loans are in repayment (91-day T-bill plus 2.80%).

Based solely on capital market forces, the FFELP Group would have recommended that the reference rate used in the formula for determining lender yield should be based on the 1-month LIBOR rate. Providers of Federal Family Education Loan Program loans support this recommendation. Using LIBOR most closely corresponds to financing strategies now used in support of student loans. By matching the lender index to funding strategies, liquidity risks to the

FFELP program associated with external events are greatly reduced. Borrower interest costs would not be changed as a result of this proposed change in the formula for lender return.

However, given the budget scoring process, the FFELP Group recommends that the Congress adopt the 90-day Commercial Paper (CP) rate plus 2.40% (during repayment), as the reference rate used to determine lender yield on FFELP loans. Based on the analysis presented in the FFELP industry "white paper" prepared for the recent Reauthorization (see page 21),[1] the conversion to CP plus 2.40% results in a slightly lower return to lenders than that received under the T-bill based formula now in effect. However, 90-day CP is the spread relationship that is the most consistent with those forecasted by the Congressional Budget Office. Indeed, the conversion to 90-day Commercial Paper plus 2.40% results in some budgetary savings over the period to July 1, 2003. In addition, commercial paper rates are highly correlated with lenders' cost of funds, are published daily by the Federal Reserve and vastly reduce the liquidity risks associated with the current index.

These recommendations will be supplemented with a more complete report that will include analyses prepared for and used by the Study Group over the past several months.

Analysis

The FFELP industry members of the Alternative Indices Study Group recommended the following lender return formulas together with the related T-bill index conversion spreads:

Lender Formula	Conversion Spread
30-day Commercial Paper plus 2.45%	0.35%
90-day Commercial Paper Plus 2.40%	0.40%
1-month LIBOR plus 2.35%	0.45%
3-month LIBOR plus 2.30%	0.50%

The FFELP industry participants' proposed 90-day commercial paper (CP) loan formula incorporates a 91-day Treasury bill (T-bill) to 90-day CP spread forecast of 0.40%. We believe that CBO's forecast of 0.45%, which is quite close to the industry's forecast, needs to be lowered because of the difference caused by the break in the CP data series as a result of the September 1997 changes implemented by the Federal Reserve. Calvin Schnure, the Federal Reserve economist responsible for the CP composite rate series, has stated that analysis conducted by the Federal Reserve prior to the implementation of the improved

[1] This paper can be found at http://www.salliemae.com/government-relations/whitepaper.pdf or at http://www.nchelp.org/contents/elibrary/download/Document/FFELP_AltInd1999.pdf

collection methodology showed that average rates in the old data series were .10% higher than those in the new series. Financial market news items and market data from that time support this conclusion. We would expect that if CBO factors such effect into its historical data that the 90-day CP spread would be reduced from its current forecast of 0.45%. We also point out that from 1990 to 1998 the T-Bill/CP spreads were equal to or less than .40% in excess of 75% of the time when the CP data series are conformed.

During the 1998 reauthorization, consideration was given to changing the index to 90-day CP + 2.40%. Our fundamental long-term economic outlook has not changed over the past year. Thus, we believe that a 90-day CP rate with a margin of 2.40% is an appropriate level in order to retain similar economics for market participants as well as for Federal budget scoring purposes.

We believe that the 1990's are the appropriate historical period to use when forecasting spreads between LIBOR and T-bill rates. In the industry's briefing paper from March 1999 entitled "The Federal Family Education Loan Program: Alternative Indices for Determination of Lender Returns," we calculated that for the nine years ended December 31, 1998, the average 90-day LIBOR/T-bill spread was .507%. Our current forecast for the spread between 90-day CP and 90-day LIBOR is .10%. Thus, the historical value of LIBOR to T-Bill during the relevant period of the 1990's, and the tight relationship to CP leads us to conclude that a loan yield of 3-month LIBOR plus 2.30% represents the economically neutral level for this alternative index. Our conclusion is also substantiated by the OMB forecast through 2009 of a T-bill/LIBOR spread relationship of less than 0.50%.

Our long-term outlook for 30-day instruments indicates that rates will be lower than those for 90-day instruments, consistent with the past 10 to 15 years. We do not believe that the LIBOR yield curve will be inverted during the next ten years. The 5 basis point difference between the 30-day and 90-day instruments approximates the spreads from the 1990's and also is the same as CBO's forecast for the CP.

APPENDIX 12: ADMINISTRATION'S EVALUATION OF BASIS RISK FOR THE GOVERNMENT UNDER ALTERNATIVE FINANCIAL INSTRUMENTS

The Administration recognizes that FFELP lenders confront basis risk, but we note that dealing with this risk by changing the index for determining payments to lenders simply shifts the risk to the government. We believe that the second Congressionally mandated study group should search for financial structures that could mitigate or eliminate basis risk, rather than shift it. Changing the index for determining lenders' returns appears to have large and varying implications for individual lender's yields and does not fully address lenders' ability to raise funds during general disruptions in financial markets. Consequently, we believe such a change should be accepted for the long-term of the FFEL program only if convincing evidence emerges that basis risk must be addressed to maintain the program's health and after alternatives are carefully weighed and found to be less acceptable.

Basis risk is not unique to student loans, and it may be dealt with in a variety of ways including hedging, bearing the risk, or changing the index for determining lender yield to a market rate more closely representing lenders' costs of funds. Changing the index does not fully remove basis risk since no one reference rate perfectly captures lenders' funding costs. Furthermore, lenders pay an added margin over the reference rate when they raise funds and variations in this margin with market conditions would not be compensated by a change in reference rate. However, changing the index or reference rate likely considerably reduces lenders' basis risk.

Changing the index or reference rate also shifts the basis risk to the federal Government. It makes the Government's interest payments to lenders dependent on a private rate (LIBOR or the commercial paper rate) while student interest payments and the Government's cost of funds continue to be linked to Treasury rates. The market value of this basis risk may be approximated by what lenders pay to hedge the risk. One means for doing so is the swap market.[1] Alternatively, the value may be read from parallel transactions, alike in all respects but the reference rate, such as occurred with the Sallie Mae student-loan asset-backed security sales in June and August.

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[1] As described in Chapter 4, the hedging vehicle relevant for FFELP lenders would be LIBOR/T-bill basis swaps. A swap involves the exchange between the two parties of streams of future income. One party promises, in this case, to make LIBOR-based payments (possibly because the firm has LIBOR-based assets to provide the income); the other party makes T-bill based payments (possibly because the firm has T-bill based assets, such as student loans) and receives the LIBOR-based payments. These contracts usually require a "swap spread" of the LIBOR rate above the T-bill rate that determines the payments. The swap market may not be perfectly efficient for hedging because, as also noted in Chapter 4, the swap spread (the cost of the hedge) may change with the size of transaction. Hedging may be done using other transactions as well, and the costs tend to be roughly the same.

In the June sale, the first tranche of securities (with the shortest maturity and first claim on payments) was sold with either a LIBOR reference rate or a T-bill reference rate. The respective rates were LIBOR plus 8 basis points or T-bill plus 87 basis points, implying a 79 point spread. For the second such security sale by Sallie Mae, the spread at sale between LIBOR and T-bill-based rates on the corresponding tranche was 86 basis points. Although definitive data on swap spreads can be difficult to obtain for reasons discussed in Chapter 4, the general level of swap spreads at the time was quite near the LIBOR-T-bill spread on these Sallie Mae security offerings. While these measures indicated hedging costs of 80 to 85 basis points, the spread between the rate on T-bills and LIBOR, in the cash markets, was 45 to 55 basis points. For commercial paper, the cash market spread was 35 to 38 basis points.

Budget scoring of the cost of the program to the government is based on projections of the cash market rates because this scoring is a forecast of cash flows expected, on average, over the future.[2] An excess of the swap spread over the cash spread implies that a subsidy is conferred by the government when it assumes the basis risk, *even if the mark-up in the formula for lenders' returns is adjusted to achieve budget neutrality.* The swap spread, or corresponding measure of hedging cost, determines the economic value of the shift of basis risk. The cash market spread roughly determines how much return the lenders must give up in the formula for their return in order to achieve budget neutrality while changing the index. When swap spreads exceed spreads in the cash market, the difference is an indication of the uncompensated gain, i.e., subsidy, to lenders who receive more than they giving up.

Swap spreads typically differ from the spread between the rates in the cash market, because of: (1) expectations about future movements in the two rates over the life of the swap contract and (2) a risk (or insurance) premium. A risk premium is built into longer-term interest rates and forward rates, and correspondingly built into the swap spread. Risk premiums exist because most participants in financial markets prefer more certainty about streams of future income or costs. For example, fixed-rate mortgage rates usually exceed floating rates, because the borrower is willing to pay for knowledge of the amount of future payments and being protected against an upward surprise in costs. The tendency for swap spreads or other hedging costs to exceed the spread between alternative reference rates in the cash market means that the adjustment in the

[2] As indicated in Chapter 2, CBO projected measures of the likely error of their forecast as well as the level of rates when scoring alternatives for the FFELP index. These measures of likely error were used, as discussed in Appendix ----, to allow for the fact that indexes with greater volatility will create higher budget costs, on average, because of the lenders' return formula is asymmetric – the federal cost of SAP payments rises if Treasury rates exceed the 8.25 percent ceiling for setting student rates while the amount that lenders give up when rates fall within a year is limited by the student rate floor. This allowance for asymmetry in estimating costs that will occur, on average, is not the same as charging for the increase in volatility of federal costs that results from the government assuming basis risk.

lenders' return formula would need to exceed the amount required for budget neutrality if lenders were not to receive a subsidy.[3]

The Administration participants in the Study Group believe that an additional subsidy is not appropriate for two reasons. First, the issue of lenders' returns had been extensively considered by Congress in the reauthorization of the Higher Education Act in 1998 and the mandate for the current study did not appear to contemplate a reopening of that issue. Second, as a matter of public policy principle, the government should not absorb risk – particularly uncompensated risk – without assuring that no other means is available to achieve the public policy purpose. Heedless assumption of financial market risks by the government from the private sector could easily mount into a misallocation of risks in financial markets, distorting economic decisions and exposing taxpayers to added costs in servicing outstanding federal debt.

On the other hand, some levels of compensation to the government for the economic transfer of basis risk might effectively require some lenders to pay for an amount of hedging -- from the change in the index -- that they did not want. For example, some lenders might initially have less basis risk than others. Consequently, it is understandable that Administration representatives and lenders, as a group, approached the basis risk issue quite differently.

Faced with this dilemma, Administration participants in the Study Group determined that the issue of basis risk should be considered in the second Congressionally mandated study. That study has a broader mandate, to explore market-based means for determining lenders' returns. In the context of that broader mandate, means might be considered for *reducing* basis risk rather than simply shifting it from one party to another. Indeed, some individual members of the Study Group mentioned such options as lender access to federal funding, at a T-bill indexed rate, or changing the index for the student rate. These options were viewed as outside of the mandate of the current study and were not explored. Consideration of the basis risk issue in the second study would permit

[3] Compensation to the government for the transfer of basis risk could well be below the actual cost of hedging for lenders because it would abstract from market imperfections that cause the price of hedging to vary with the size of the transaction, and it probably should be determined by the bid rather than ask side of the swap market so as to exclude returns to swap dealers. Additionally, the compensation should exclude the value of the floor on lenders' returns (this floor at the student rate is equivalent to a financial option, with market value as discussed in Chapter 4) since the floor limits the needed amount of hedging to neutralize basis risk.

exploration of other means -- such as, but not limited to, these -- for dealing with the problem, before turning heedlessly to government assumption of the risk.

APPENDIX 13: PRINCIPLES OFFERED BY NON-LENDER, NON-GOVERNMENT MEMBERS, AND RESPONSE TO PRINCIPLES, OFFERED BY FFLEP COMMUNITY MEMBERS

Principles Offered by Non-Lender, Non-Government Members

Herewith is a proposed set of principles with which to evaluate the proposals put forth:

First, budget neutrality to protect the taxpayers' interests.

Second, borrowers should benefit equally in any changes, for example by a reduction in fees or a reduced repayment rate.

Third, lenders deserve to earn a reasonable return on their investment and risk.

Fourth, there should be no increase in the complexity of the programs; i.e., any changes should be systemic, not ad hoc.

Fifth, any changes should not detract from the goals of the second study.

Sixth, the recommendation should affect the long-term as well as the short-term.

Seventh, the recommendation should not detract from a healthy, competitive market for student loans.

Eighth, any change recommended should be consistent with the structure of the loan industry in term of liquidity, volatility, etc.

Ninth, the timing of changes to FFELP/DL should be made at a logical and manageable time of the year for all parties involved (lenders, schools, students) and the changes should be communicated in a systematic manner to all parties involved.

Tenth, both FFELP and DL borrowers should have an equal opportunity to benefit from any financial changes to FFELP. From the student's point of view, both are federally subsidized student loan programs. It's not fair for one student group to benefit from reduced costs and not the other.

Response to Principles, Offered by FFELP Community Members

This memo is to respond to the suggest that we provide you with our analysis of our most recent proposal, as put forward at the August 31st meeting of the Study Group, using the principles which you shared with the Group on September 1st.

We believe that when applied to any proposal, there will be some tension among some of the individual principles. We have noted some examples.

Our responses are as follows:

Principle 1 – Any change must be budget neutral to protect the taxpayers' interest.

> The FFELP community participants' approach to determining the correct conversion from the existing T-bill based formula to one based on Commercial Paper or LIBOR has always been that any recommended conversion would maintain budget neutrality. The conversion formulas recommended by the FFELP community can be implemented at no additional cost to the taxpayer through the 2003 reauthorization and at no additional cost above the existing 91-day T-bill formula after 2003. Budget neutrality should be based upon the final CBO scoring analysis.

Principle 2 – Borrowers should benefit equally from any change.

> Borrowers are currently benefiting from the low T-bill interest rate environment and the 1998 legislated 0.80% borrower rate reduction. By changing the index from the 91-day T-bill to one that reflects lenders' cost of funds, lenders will be able to more closely match fund their student loan portfolios. This will encourage lenders to remain in the program and take a long-term view on investing in and improving the infrastructure of this student loan program. Consistent lender participation and investment in the program will result in increased competition among lenders to attract borrowers and schools. Greater competition invariably leads to lower costs and better service for borrowers. In the past, lender competition has resulted in reduction of fees and repayment rates to students, a wide choice of lenders by schools and needed investments in technology to develop systems that better meet school financial aid administration needs. Investments in student loan servicing technology will reduce default rates thereby reducing the overall cost of the student loan program to the taxpayer. Students pursuing a higher education in the future will be assured of the continued flow of private sector capital to finance education through all economic cycles as well continued investments in service delivery.

Principle 3 – Lenders deserve to earn a reasonable return on their investment and risk.

Lender return has been reduced due to the 1998 Reauthorization and market conditions. Many lenders are not hedging against basis risk since it is not affordable. The final index change will have different effects among lenders. Under the lender formulas advanced by the FFELP community members, lenders are expected to earn returns over the long-term that are slightly lower than what they have earned in the past. Lenders are willing to accept slightly lower future earnings in exchange for a decrease in volatility in the spread between what they receive on their student loan assets and pay on their funding. Vigorous competition will ensure that borrower interest rates are kept to a minimum and services continually improve.

Principle 4 – There should be no increase in the complexity of the program.

Changing the index on which lender yields are based will not increase the complexity of the program to students, schools or lenders. It will only make raising capital more predictable for lenders. The change to a Commercial Paper or LIBOR index can be implemented by lenders in the same manner as past changes to the T-bill based formula.

Principle 5 – Any changes should not detract from the goals of the second study.

The goals of the second study are set forth in section 801 of the Higher Education Act. Implementation of a market-based index is consistent with the second study's mandate to establish a market-based mechanism to determine loan pricing. Lenders are committed and eager to create a stronger and more rational industry structure.

Principle 6 – The recommendation should affect the long-term as well as the short-term.

During the anticipated applicability of the revised reference rate formula (through June 30, 2003), more than $55 billion in FFEL loans are expected to be made. These loans have an average life of at least eight years, and some will be outstanding longer. Even if a permanent change in the law is not feasible at this time, a change through June 2003 would represent a positive step towards improving the FFEL Program as we face the significant challenges of the future.

Viewed more broadly, the adoption of a modern reference rate formula will help assure the continued participation of a broad diversity of lenders and other loan providers. This will set the stage for increased market competition well into the future. This market competition will benefit students in the of better customer service and rate competition.

Principle 7 – The recommendation should not detract from a healthy, competitive market for student loans.

A change in the lender index will reduce the uncertainty associated with match funding student loan portfolios under the current T-bill indexed formula. More stable and predictable match funding will encourage lenders to remain in the program and take a long-term view when considering investments to maintain and improve the infrastructure of the student loan program. From 1990 through 1997, the number of lenders participating in the FFELP student loan program declined by over 50 percent. A change in the index will help stem the decline in lender participation and increase the competition among lenders.

Principle 8 – Any change recommended should be consistent with the structure of the loan industry in terms of liquidity and volatility.

The relatively unstable relationship between T-bill rates and student loan providers' funding costs has had a significantly negative impact on FFELP participants' abilities to match fund their portfolios. By switching to a market-based index and reducing the unnecessary capital markets uncertainty that accompany the T-bill index, predictability and certainty in the FFEL program can be enjoyed at no additional cost to students, schools or taxpayers. A change to a lender index based on Commercial Paper will greatly enhance liquidity to FFELP participants by reducing the funding volatility associated with the legacy T-bill index.

Principle 9 – The timing of changes to FFELP/DL should be made at a logical and manageable time of the year for all parties involved (lenders, schools, students), and the changes should be communicated in a systematic manner to all parties involved.

Changing the index on which lenders are compensated will not affect students or schools. In fact, as competition between lenders increases, borrowers and schools should benefit over time from program improvements.

Lenders will be required to make modifications to their loan servicing systems and they along with their loan servicers have sufficient expertise to make such modification within a relatively short time frame. Servicers historically have made numerous changes due to revision in the laws and regulations governing guaranteed student lending. Any changes, of course, would be carefully coordinated with the Department of Education.

Principle 10 – Both FFELP and DL borrowers should have an equal opportunity to benefit from any financial changes to FFELP.

As indicated above, legislated student rates will not be impacted by a change in the lender rate. Some differences in the FFELP and DL programs exist but they are unrelated to the lender interest rate index.

APPENDIX 14: FFELP COMMUNITY MEMBER COMMENTS ON THIS REPORT AND THE IMPLICATIONS OF BUDGET SURPLUSES

This section represents the views of the representatives of private sector participants in the Federal Family Education Loan Program (FFELP) on the Alternative Indices Study Group. Section 802 of the Higher Education Act of 1998 required that the study group submit a report to Congress evaluating the index on which lender returns are based in the student loan program. Given the importance of the issue and the course of the study itself, we felt compelled to put forth our views because the report, while replete with details and analysis, does not address one of the most significant issues facing the FFELP. The fact is that drastic changes in the Treasury securities markets necessitate a change in the index on which lenders earn returns in the student loan program. The FFELP community has advocated proactively for some time to change to a new index, which was enacted at the end of the last congressional session. Developments since then have further demonstrated the necessity of that move.

While the Alternate Indices Study Group discussed changing Treasury markets as a fundamental problem, the report does not address the issue. In particular, chapter 3, which discusses the Treasury market specifically, largely ignores the pending challenges to the Treasury Department in managing the supply of Treasury securities in the time of budget surpluses. The chapter looks backward ("Past as Prologue") to provide assurances that "significant consequences (*of budget surpluses on the Treasury bill market)* seem quite far in the distance."

However, there are plenty of sources that paint a less sanguine picture.

Both the Administration and the Congressional Budget Office project the elimination of debt held by the public within twelve to thirteen years. Over the past few years, with the advent of federal budget surpluses, each year's projection has moved up the date when the debt could be eliminated. Under CBO's most conservative forecast, there will be more surpluses than debt available to retire by 2009.[1] In other words, CBO is forecasting that the federal government will have excess cash on-hand by 2009. If that forecast transpires, the short-term treasury bills would be virtually eliminated. In the short term, CBO is forecasting that the public debt will be reduced by 5 percent in 2000 and 2001, increasing to 6 percent in 2002, 7 percent in 2003, and 8 percent in 2004.

[1] Congressional Budget Office, "The Budget and Economic Outlook: Fiscal Years 2001-2010," January 2000, p. 20. Forecast assumes that discretionary spending increases at the rate of inflation every year.

CBO Projections of Debt Held by the Public
Assuming Discretionary Spending Increasing with Inflation
(in billions of dollars)

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Debt Held by Public	3,633	3,455	3,292	3,097	2,884	2,651	2,394	2,080	1,721	1,330	1,016	941
Reduction from py	-89	-178	-163	-195	-213	-233	-257	-314	-359	-391	-314	-75
% reduction from py	-2%	-5%	-5%	-6%	-7%	-8%	-10%	-13%	-17%	-23%	-24%	-7%
Accumulated excess cash	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	122	528

Similarly, the Administration's fiscal 2001 budget puts forward a plan that would eliminate the public debt by fiscal year 2013. Over the next five years, the Administration's budget projects that the debt held by the public will be reduced by $852 billion, somewhat less than the $982 billion forecast by CBO but considerable nonetheless.

The unexpectedly large surpluses in the past two years have already had an impact on the market for Treasury securities, in general, and for the Treasury bills, specifically. The General Accounting Office documented this impact in its September 1999, report, "Federal Debt: Debt Management in a Period of Budget Surpluses." The following excerpts from the report show the impact of the unexpectedly large surpluses in 1997 and 1998 and the challenge of managing debt reduction going forward.

> The effect of the better-than-expected fiscal outcomes in 1997 and 1998 initially resulted in reductions in short-term debt... Since some bills mature each week, the unexpected cash inflows were used to redeem bills. However, according to a Treasury official, bills were redeemed at such high levels that the liquidity of the bill market was adversely affected and the average life of marketable debt increased modestly. [2]

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> According to Treasury and Federal Reserve officials, the amount of bills reduced was sufficiently large to cause the market for bills to become less liquid.[3]

The GAO report predicted that the large projected surpluses will pose a significant challenge to the management of the Treasury securities markets and that the goals of liquid markets and lowest cost to the government may not be compatible.

> Declining levels of debt prompt the need to make choices over how to allocate debt reduction across the full maturity range of securities used. The stakes associated with debt reduction strategies are considerable. As

[2] General Accounting Office "Federal Debt: Debt Management in a Period of Budget Surpluses" September 1999 (GAO/AIMD-99-270), p. 5.
[3] Ibid.

> debt declines, the Treasury faces more difficult trade-offs in achieving broad and deep markets for its securities and the lowest cost financing for the government[4].
>
> ***
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> ... the level of debt held by the public projected by CBO for 2009 is less than the dollar amount of federal securities owned by the Federal Reserve and state and local governments combined at the end of fiscal year 1998... the comparison above gives a sense of the size of the continuing and more extensive adjustments by both the Treasury and market participants[5].
>
> ***
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> These changes, for instance, may very well affect the use of Treasury securities as benchmarks to price other financial transactions. Although markets tend to adjust to these shifts over time, changes may not be seamless or without cost[6].

While markets may adjust to these shifts, the index for student loans is set by statute and cannot be adjusted without legislation.

These challenges of managing Treasury securities in a time of federal surplus are already apparent. In February, Gary Gensler, Under Secretary for Domestic Finance for the U.S. Treasury, announced that, during the 3rd quarter of fiscal 2000, the government would have the largest reduction in public debt in the nation's history. Under the heading "Debt Management Challenges," Mr. Gensler announced:

> ...as budget surpluses continue to diminish our borrowing needs, we now face additional challenges going forward. First, debt held by the public is forecast to shrink even further and faster than it has in the last two years. As we announced on Monday, we estimate that we will paydown $17 billion in net market borrowing for the January-March quarter. This will be followed next quarter with the largest reduction in publicly held debt in our nation's history, as we pay down approximately $152 billion. More significantly, there is now a consensus among private sector and government forecasters that these paydowns will grow in the future[7].

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[4] Ibid, p. 17.
[5] Ibid, p. 18.
[6] Ibid.
[7] February 2, 2000, Press Release from the Office of Public Affairs, U.S. Treasury: Under Secretary of the Treasury for Domestic Finance, Gary Gensler, Remarks at the February 2000 Treasury Quarterly Refunding.

The strategy that Treasury announced to manage this historic paydown of public debt already has had huge ramifications in the Treasury markets. While, in the short term, Treasury has taken actions to maintain the short-term bill market, assurances such as those in chapter 3, "Treasury debt management is committed to maintaining a deep and liquid T-bill market," are unlikely to stand up in the long-term to the unprecedented reduction in public debt. We are likely to see, over the average life of a FFELP loan, even more dramatic changes in the Treasury markets.

It is important to keep in mind the long-term characteristics of student loans. The repayment term of a FFELP loan is 10 years. Most of these loans do not go into repayment until the borrower has left school—the average in-school period is two years. The loan life can be extended through deferments, forbearances, and may be extended for a period of up to 25 years or 30 years, respectively in the case of extended repayment or consolidation. As a result, there may be a large amount of FFELP loans statutorily indexed to an instrument that no longer exists.

This potential risk is remarkably close to reality today for nearly 6 percent of outstanding FFELP loans: PLUS loans issued between 1992 and 1998 which are indexed to the 52-week Treasury bill. In February, Mr. Gensler announced that the number of auctions of 52-week bills would be reduced from 13 per year to four per year. In addition, Mr. Gensler stated, "It is likely that, as further reductions in issuance become necessary, elimination of the one year (bill) will be considered."[8] Certainly, when these loans were issued, it was inconceivable that the instrument on which the PLUS index was based would be eliminated. Few anticipated the remarkable change in the federal budget and projected surpluses. However, the government's good news is clearly a crisis for FFELP. Could there be any more compelling evidence for the need for the new FFELP index?

Going forward, it is vital that new FFELP loans are being issued under a more resilient index. The March 1999 report by the FFELP community, "The Federal Family Education Loan Program: Alternative Indices For Determination of Lender Returns,"—which is included in Appendix xx of the report—documented the global capital market's overwhelming preference for securities indexed to LIBOR or commercial paper rates and the need to base the FFELP lender returns on one of these rates. As the Treasury debt continues to be reduced, the potential need to find new benchmarks for securities increases. Deputy Secretary Stuart Eizenstat acknowledged this potential in his confirmation hearings before the Senate Finance Committee last year. In responding to a question on the key uses of Treasury securities and what impact the elimination of the public debt would have on these uses, he stated:

> As the supply of Treasuries dwindles in the future, as we gradually reduce the debt held by the public, there would be a ready supply of other

[8] Ibid.

> securities of other issuers including high quality corporations and government sponsored enterprises that would likely become benchmarks for the broader securities markets.
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> ***
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> The Federal Reserve currently uses Treasury securities to conduct open market operations, but it has not always been that way, nor would it have to be in the future.... As with other market participants, the Federal Reserve would adapt to such a changing environment by substituting other debt securities for Treasuries[9].

The developments in the Treasury markets over the past few years have demonstrated the pressing need for a new index for FFELP loans.

However, FFELP could not make the transition to a new index unilaterally. Legislation was enacted late last year to provide that, beginning on January 1, 2000, new FFELP loans be indexed to 90-day commercial paper rates. By enacting this change, new FFELP loans are on a solid base for the future and the provision of new private capital to the student loan program has been greatly enhanced.

In opposing this change, the Administration argued that the change of the lender rate to commercial paper while maintaining the student rate based on the Treasury bill would result in unacceptable risk to the government (these arguments are put forth in Appendix 11). At the same time the Administration asserted there is no problem with the Treasury bill index (see chapter 3), it claimed that the risk associated with a different index for lenders and borrowers would result in significant costs to the U.S. Treasury.

The Administration pointed to the swap markets—markets where the rates for LIBOR or CP can be exchanged with Treasury rates—to claim that the risk to the government was unacceptably high. The Administration implies that there is a significant economic cost to the government by using anecdotal evidence from two Sallie Mae securitizations. However, it is the inefficiencies and flaws in the swap markets documented in Chapter 4 and Appendix 8 that are the very reason that this study group was convened. The findings in GAO's survey of lenders support why the swap market is an inappropriate measure for expected government costs or lender "value." The survey found significant problems with both sides of the swap market, stating that "since October 1998, the market for this [*T-bill/LIBOR*] swap has been very illiquid and 'gappy.'" It found that there are few buyers in the T-bill/LIBOR swap market and that there are no sellers in this market either. Appendix 8 states:

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[9] U.S. Senate Committee on Finance, Hearing on the Nomination of Stuart E. Eizenstat for Deputy Secretary of the Treasury, Written Response to Question from Chairman Roth.

> there's no natural counterparty for a T-bill-LIBOR swap (and no natural investor for variable-rate T-bill-based assets). The market for T-bill-based securities is thin because of the need to swap into LIBOR. The price that would be required makes swaps unfeasible...
>
> ***
>
> T-bills are also an unnatural index because of special characteristics of the instrument.

These flaws have only been exacerbated by the recent developments in the Treasury markets.

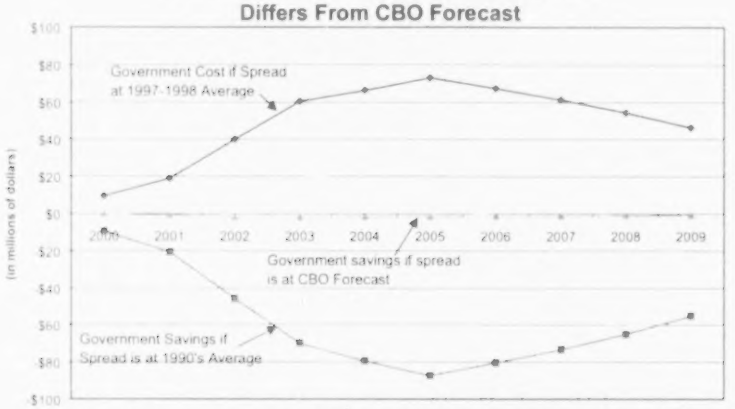
As part of the debate, the FFELP community did acknowledge that there would be some risk of additional costs to the government if the lender index were changed. However, CBO's probability scoring captures the expected government cost associated with the likelihood that the difference between the Treasury bill and the 90-day commercial paper rate will be larger than forecast. CBO's methodology is described at the end of chapter II, which states that,

> CBO's projections also provided measures of possible forecast error that would lead rates to move around the expected level forecast... Therefore, in making the budget scoring projections discussed elsewhere in this report, the uncertainty of the interest rate projections as well as the forecast levels are taken into account.

CBO forecast the difference between 91-day Treasury bill rates and 90-day commercial paper rates would be about 0.44 percentage points. However, to achieve budget neutrality and cover the likely government cost associated with the volatility between the T-bill and CP rates, the legislation changing the index last year adjusted the margin over the benchmark by 0.46 percentage points (the index was changed from T-bill plus 2.80 percentage points to CP plus 2.34 percentage points). CBO estimated that this legislation would reduce outlays by $25 million from fiscal 2000 to 2003.

Further, the FFELP community has asserted that the cost associated with that risk of the new index was far less than the Administration asserted. To demonstrate this, the FFELP community put forward a chart that showed the potential costs and savings to the government from a lender index based on 90-day commercial paper plus 2.34 percent. This chart puts some perspective on the costly risk that the Administration asserted the government would undertake under the new index. The chart—included below—shows that if, in any year, the difference between 3-month commercial paper and T-bill widen more than CBO has projected, the federal government will incur some costs. However, these costs are a mere thousandth of a percent of the costs that Treasury manages.

Student Loan Lender Rate at CP plus 2.34%
Potential Costs/Savings if CP/T-bill Spread
Differs From CBO Forecast



NOTE: Savings and costs represent estimated cash impact in each year if difference between CP and T-bill differ by less or more than CBO forecast in that year. CBO forecasts the difference between CP and T-bill to be 0.44%, the spread is set at CP plus 2.34, a difference of 0.46% to cover probability cost. The 1990's average has been 0.35%, the 1997-98 average was 0.57%.

By the same measure, if spreads average their historic levels (such as the average since 1990 or since 1985 or since 1980), lender returns would be less and costs to the American taxpayer would be reduced.

Indeed, since the index change on January 1, it is the government that has reaped the savings. Since January 1 to February 25, the CP/T-bill difference has been 0.43 percentage points, below the 0.46 percentage point difference which resulted in the new index of CP plus 2.34 percentage points. Further, the CP/T-bill difference has been trending downward since the beginning of the year, moving away from the impact of year 2000 issues on the financial markets. Since mid-January, the average difference has been less than 0.40 percentage points, moving closer to historic averages.

Conclusion

As members of the Alternative Indices Study Group, we appreciate the time and effort put in by all members of the study group and by the supporting staffs from the General Accounting Office, the Department of Education, the Congressional Budget Office, the Congressional Research Service, the Office of Management and Budget, and the Department of Treasury. Clearly, the awareness of the issue has been heightened by the strong debate during the study groups deliberations and the consideration of legislation changing the index. We believe that the events over the past few years, and increasingly over the past few months, continue to demonstrate the necessity of changing the index in the student loan program.

The changing Treasury markets will continue to pose a challenge in managing the more than $90 billion in outstanding student FFELP loans that are still indexed to the 91-day Treasury bill. However, by assuring the stability of new FFELP loans, the new index allows the FFELP private sector participants to invest in the future of the student loan program. The FFELP loan providers will continue to use the innovation and technological capacity of the private sector to bring more options and new opportunities to students and parents and schools relying upon FFELP.

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APPENDIX 15: TREASURY STATEMENT REGARDING BUDGET SURPLUSES AND IMPLICATIONS FOR LIQUIDITY

FROM THE OFFICE OF PUBLIC AFFAIRS

FOR IMMEDIATE RELEASE
February 2, 2000
LS-365

UNDER SECRETARY OF THE TREASURY FOR DOMESTIC FINANCE
GARY GENSLER
REMARKS AT THE FEBRUARY 2000 TREASURY QUARTERLY REFUNDING

Good morning. I am pleased to be with you today to discuss the governments refunding needs for the current quarter. This month marks the longest running economic expansion in our nations history. The President announced on Monday that, by the end of the year, we will have paid down approximately $300 billion in debt over three years. As our nations debt takes up a smaller portion of our economy and our financial markets, our continued fiscal discipline contributes significantly to the health of the economy.

Debt Management Challenges

To date, Treasury has managed the declining debt by refunding our regularly maturing debt with smaller amounts of new debt. We have accomplished this by two means. First, we have reduced the number of longer-term debt issuances by one-third, from 39 to 26 auctions per year, while keeping auction sizes relatively constant. Second, we have cut the size of our short term bill auctions by almost a quarter, from an average of almost $20 billion in 1996 to just over $15 billion in 1999, but have maintained the number of issues.

Fortunately, as budget surpluses continue to diminish our borrowing needs, we now face additional challenges going forward.

First, debt held by the public is forecast to shrink even further and faster than it has in the last two years. As we announced on Monday, we estimate that we will paydown $17 billion in net market borrowing for the January-March quarter. This will be followed next quarter with the largest reduction in publicly held debt in our nations history, as we pay down approximately $152 billion. More significantly, there is now a consensus among private sector and government forecasters that these paydowns will grow in the future.

Second, the effect of seven years of fiscal discipline is already showing up in our maturing debt. There will be a great deal less maturing debt to be redeemed in the very near future. This fiscal year, $476 billion of coupon debt will mature,

down from a peak of $510 billion in 1998. Over the next 15 months, the last of the old 7-year and 3-year notes will mature. Thus, by 2002, debt maturing will decline significantly. Debt maturing in 2002 is likely to be less than $400 billion.

Third, we face the challenge of how to continue to issue sufficient longer-term debt without an unacceptable lengthening of our maturity structure. For instance, if we maintain the current level of longer-term financing (10-year and 30-year debt), the average maturity of Treasury debt is forecast to lengthen from about 5 3/4 years currently to approximately 8 years by the end of 2004. Over the long term, this would impose an unnecessary additional cost on the taxpayers to finance our debt.

We have several announcements to make today concerning adjustments we are making across our debt management program to further address these challenges.

Reducing Size of Long-Maturity Issues

Our first announcement concerns reductions in the issuance sizes of longer-maturity debt. This reduces our funding, takes into consideration the longer-term fiscal forecasts, and helps us manage the average maturity of our debt. In this regard, we plan to reduce the issuance of 5-year, 10-year and 30-year debt, both fixed rate and inflation-indexed securities.

At the last quarterly refunding, we announced new rules to facilitate reopening of our benchmark securities within one year of issuance. We now will be adopting a regular reopening schedule for our longer term securities. Our current offering plans are as follows:

- New 5-year notes will be offered in May and November, with smaller reopenings in February and August. The February five-year note therefore will be a smaller reopening of the November 5-year note.
- New 10-year notes will be offered in February and August, with smaller reopenings in May and November. The May offering of our 10-year notes therefore will be a reopening of the 10-year notes we issue this quarter.
- New 30-year bonds will be offered only in February, with significantly smaller reopenings in August.

In line with the reductions we are making in our 5- and 10-year notes and 30-year bonds, we also intend to reduce the issuance size of our inflation-indexed notes and bonds. We started this process last month, when we reduced the auction size on the 10-year securities from $7 billion to $6 billion. We are now announcing that we plan to auction only one 30-year inflation-indexed bond, which will be issued in October. There will be no April issue. In addition, we most likely will make further modest reductions in the size of the 10-year inflation-indexed note.

Taken together, our aggregate issuance of 30-year debt for this fiscal year will be less than half what it was in FY1999. We expect that these changes to our auction schedule will preserve the liquidity of our 5-, 10- and 30-year securities while reducing the overall size of our longer term issuances. We will continue to assess the size, frequency, and issuance of these securities in the future.

Debt Buybacks

Last month, Treasury announced the adoption of a final rule that permits us to conduct buybacks of outstanding Treasury securities prior to maturity. We will begin using this new debt management tool promptly.

We plan to conduct up to $30 billion of debt buybacks this year, with the first operations conducted in the next two months. Our initial buyback operations will be approximately $1 billion each in size and will focus on the longer-maturity sector. These initial operations will provide an opportunity for both the market and the Treasury to gain experience with the reverse auction process prior to more significant operations. After evaluating our first buyback operations, we will refine our approach to using buybacks going forward. The use of debt buybacks will help us best maintain the liquidity of our remaining issues, while also managing the average maturity of Treasury debt.

Reducing Number of Short Maturity Issues

Lastly, we plan to reduce the issuance of our shorter-maturity securities. Based on the Borrowing Advisory Committees recommendations, we are reducing the auction frequency of our one-year bills. These bills currently are auctioned every four weeks. We will now auction one-year bills only four times each year. The last monthly auction of the one-year bill will take place on March 2 and the next auction will then be June 1. This change to our auction schedule will eliminate five one-year bill issues this fiscal year.

Consistent with the Committees recommendations, we will maintain the regular monthly auctions of our two-year notes at the present time. We plan, however, to cut modestly the size of individual auctions of two-year notes.

These changes will enable us to increase the size of our three- and six-month bill auctions, as well as respond to our reduced borrowing needs. We will increase the size of weekly bills beginning with the regular auction announcement tomorrow. It is likely that, as further reductions in issuance becomes necessary, elimination of the one-year will be considered.

Terms of the February Refunding

I will now turn to the terms of the quarterly refunding. We are offering $32 billion of notes and bonds to refund $27.6 billion of privately held notes maturing on February 15, raising approximately $4.4 billion.

The securities are:

1. A reopening of the 5 7/8 % note of November 1999, maturing on November 15, 2004, in the amount of $12 billion;
2. A 10-year note in the amount of $10 billion, maturing on February 15, 2010; and
3. A 30 1/4-year bond in the amount of $10 billion, maturing on May 15, 2030.

These securities are scheduled to be auctioned on a yield basis at 1:00 p.m. Eastern time on Tuesday, February 8, Wednesday, February 9, and Thursday, February 10, respectively.

As announced on Monday, January 31, 2000, we estimate that we will have a $40 billion cash balance on March 31, as well as on June 30. We expect to issue cash management bills this quarter to bridge seasonal low points in our cash position.

The next quarterly refunding press will be held May 3, 2000.

GLOSSARY

Asset-backed securities (ABS): an increasingly common and important source of funding for many financial instruments such as mortgages, credit cards, automobile loans, and, more recently, student loans. In a securitization of loans, the holder of the loans transfers them to a single-purpose, bankruptcy-remote trust or other entity. To finance the transfer, the trust or other entity issues its own debt obligations (securities), primarily with high credit ratings. The pools of loans are used as collateral to create new securities of specified maturity and interest rate that can be bought and sold. The creator of the pool guarantees that the interest and principal on each security will be paid according to schedule. The original lender or another institution services the loans by collecting loan payments from the borrowers and passing them on to the creator of the loan pool. In turn, the creator of the loan pool pays the interest and principal on the asset-backed securities to the investor who holds the securities.

Basis Point: one one-hundredth of a percent.

Basis risk: the potential for financial loss that can arise through interest rate changes when the variable rate on the asset is tied to a financial instrument that is different from the variable rate on the liability that funds it. In student lending the asset is tied to T-bill while the funding is often tied to LIBOR or CP rates.

Basis swap: a swap contract has two parties who exchange (swap) interest rate payments based on a notional value for the principal for the term of the contract. Both parties pay a variable rate referenced to a market rate, such as T-bill, LIBOR or CP. One party pays according to one rate while the other party pays according to a different or rate. Normally the T-bill payer pays T-bill plus a margin and receives in exchange LIBOR or CP. The margin over T-bill reflects the spread between T-bills and the other rate as well as the risks of movements in the spread over the life of the swap contract.

Bid-ask spreads: the difference between the bid price (yield) and ask price (yield) of a financial instrument. Bid-ask spreads are an indicator of market liquidity, with narrower bid-ask spreads indicating greater liquidity.

Commercial paper: short-term unsecured debt issued by many large, well-known companies, both financial and nonfinancial. Maturities for commercial paper range up to 270 days. Most often, commercial paper is issued with maturities of less than 1 or 2 months.

Credit risk: the risk of loss if the borrower does not make payments of interest and principal on a timely basis. In the case of FFELP loans, this risk is covered to a great extent by guarantee agencies and federal reinsurance for student loans, provided that the loans are serviced properly. See *servicing risk*.

Formula spread: the difference between a lender's income and expenses in its FFELP activities, which is affected by the formula for lender yield and interest rates paid for funds. In student loan lending the yield on the assets usually moves with T-bills but the funding costs move with LIBOR or CP rates. Movements in the formula spread create basis risk or interest rate risk for FFELP lenders.

Guaranty agencies: agencies that guarantee FFELP loans up to 98 percent of principal and accrued interest (100 percent in the case of death, disability, bankruptcy discharge, closed schools and loans-of-last-resort). The government reinsures up to 95 percent of the guaranty agencies' risk and provides them with income streams (loan-processing/issuance, account-maintenance and default-aversion fees, and collection retention) and federal reserve funds, including any borrower-paid guaranty fees, to cover their guaranty obligations and operational expenses. (The government also directly guarantees FFELP lenders against the inability of guaranty agencies to fulfill their guarantees because of insolvency.) Guaranty agencies ensure that servicers' collection efforts are undertaken in accordance with federal regulations. Use of appropriate collection efforts protects the federal re-guarantee of student loan values in the event of default. As of September 1999, The Secretary of Education had designated on a state or national basis 36 state and private, nonprofit guaranty agencies.

Hedging: a financial strategy that reduces risk by entering contracts with other financial institutions that result in a reduction in the basis risk, or the volatility of the formula spread. Normally a hedging strategy simultaneously lowers the risk and the expected risk at the same time because the lender must pay the other financial institution to accept the risk it is shedding.

Lender's interest expense: a market rate plus a margin.

Lender's spread: the difference between its yield and interest expense (interest income minus interest expense).

Lender's yield: for FFELP lenders, this equals a reference (prior to January 1, 2000, the 91-day Treasury bill rate; now, the 3-month commercial paper rate) plus a markup, as long as this yield does not exceed the student's borrowing rate. The yield is adjusted quarterly. The difference between the lender yield and the borrower rate is paid by the federal government and referred to as the "special allowance payment" (SAP).

Liquidity: as a characteristic of a security or a commodity or the market for that security or commodity, liquidity means that buying and selling can occur readily at current market prices. Liquid markets or liquid securities have sufficiently large volume outstanding and sufficiently active trading that large transactions

can be made without a substantial movement in price. Furthermore, because of active trading among investors and/or dealers, isolated events and or erratic behavior by a single market participant are unlikely to have major effects on the market price.

Loan servicers: entities that ensure that cash flows of FFELP loans are recorded and transferred to lenders, guarantee agencies, and themselves in accordance with loan requirements and other federal regulations. If servicing is done incorrectly, the lender may not be reimbursed if the borrower defaults. Except for Sallie Mae and a few of the largest student loan lenders, legal holders of student loans tend to arrange for some or all of the FFELP program loan origination and/or maintenance functions to be performed by a third-party servicer. Some large holders of student loans provide loan servicing to other holders that may or may not be selling loans to the large holders.

London interbank offer rate (LIBOR): the reference rate on U.S. dollar-denominated interbank lending in London. Hence, it is the interest rate on dollar-denominated offshore loans from banks with temporary "excess" funds to banks facing strong demands for funds, either for dollar-denominated loans overseas or from their home offices. These interbank loans are for a fixed term and are made in large denominations. LIBOR also serves as a reference rate for a number of other transactions.

Management risk: the risk that management will be unable to manage the firm or the state guarantee agency. The mismanagement of the firm can lead to bankruptcy and missed payments to investors. The mismanagement of a state secondary market entity can lead to a state takeover or even closure of a firm.

Margin: a market-based add-on to a market rate (a margin can be negative and it changes based on market conditions and the creditworthiness of the borrower)

Markup: for purposes of this report, an amount, determined by the law, added to an established reference rate (such as a Treasury bill rate) to determine a new rate.

Market rate: interest rates that are used by market participants to determine contract requirements because these rates are considered to be on liquid instruments and therefore truly reflect market conditions. In this report we often refers to three market rates: T-bills, LIBOR, and CP.

Prepayment risk: the risk that student will pay off loans more quickly than expected.

Reference rate: an interest rate used, or referred to, in a formula for calculating another rate. For example, the interest rate on 91-day Treasury bills serves as a

reference rate in determining the interest paid by borrowers of FFELP loans and in the formula for determining the lender yield on a FFELP loan.

Reinsurance: insurance provided to the guaranty agency by Treasury.

Regulatory risk: the potential for financial loss due to changes in law or regulations, also known as political risk. Regulatory or political risk exists because the returns and risk in the student loan program depend not only on the fundamental economic and market risks but also on legal and regulatory changes created by the federal and state governments. Over the years, the FFELP has undergone a variety of such changes, including changes in the interest rate subsidies and regulatory rules dealing with guarantee fees and payments in the event of student borrower default.

Secondary market: for purposes of this report, an institution that buys loans from originators.

Servicing risk: the risk of financial loss due to poor servicing of a loan. Improper servicing can void the federal guarantee of student loans.

Special allowance payment (SAP): a payment that the federal government makes to FFELP lenders, which is designed to compensate lenders for within-year fluctuations in interest rates. This payment, calculated quarterly, is the lender yield minus the student borrower's rate. If this difference is negative, the SAP is zero.

Spot rate: the rate of interest or price being currently charged.

Spread risk: for purposes of this report, the potential for a FFELP lender's financial loss resulting from differences between the interest rate the lender pays for funding FFELP loans and the legislated special-allowance reference rate of 91-day Treasury bills. In such cases, the lender's net interest income will vary depending on the current spreads between the 91-day Treasury bill rate and the interest rates in which it actually funds. For example, if LIBOR was 2.8 percent above the 91-day Treasury bill rate, and a lender financed exclusively at LIBOR, the lender would not have any net interest income.

State designated secondary market: institutions that purchase loans from originators and must originate student loans for borrowers who cannot get a loan elsewhere.

Student borrower's rate: in the FFELP, equals a reference rate (91-day Treasury bill) plus a markup (currently 1.7 percentage points while the borrower is in school or in certain post-schooling periods not requiring repayment, and 2.3

percentage points while the borrower is in repayment), with a cap of 8.25 percent. This rate is adjusted annually.

Swap: an agreement between counterparties to make periodic payments to each other for a specified period. In a simple interest rate swap, one party makes payments based on a fixed interest rate, and the counterparty makes payments based on a variable rate. A FFELP lender can arrange for another party to assume the spread risk (and opportunity) associated with the student loans by purchasing an interest rate swap. However, such a purchase will reduce the overall profitability of the lender's student loan business.

Swap Spread: the markup over the T-bill rate paid by firms swapping aT-bill rate for a commercial rate

Treasury-Eurodollar (TED) spread: the difference between the rate on 91-day Treasury bills and the London interbank offer rate (LIBOR). This difference is generally determined through a comparison of the monthly average of 91-day Treasury bill rates and the monthly averages of LIBOR. See *formula spread* and *lenders' spread* in this glossary.

Treasury Bill (T-bill): A noninterest-bearing obligation of the U.S. government, payable to the bearer, maturing in less than a year from the date of issue. The shortest-term, regularly issued Treasury securities are bills with initial maturity of 91 days, the maturity relevant for FFELP. Treasury bill rates serve as the reference rate in determinations of interest paid by borrowers and in the formula for lender yield.

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